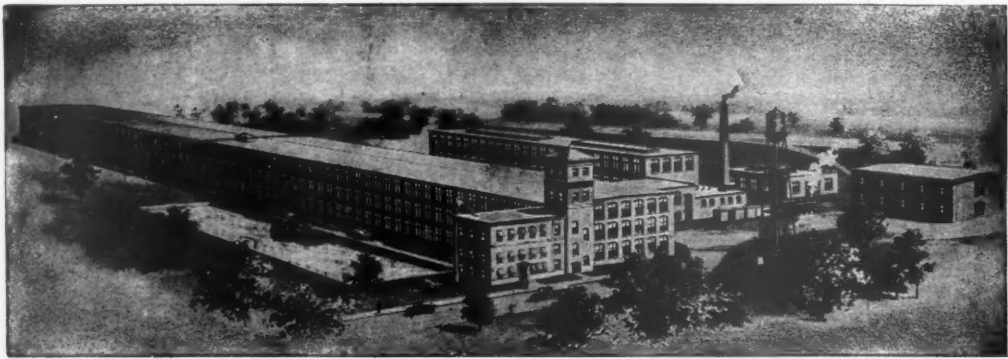


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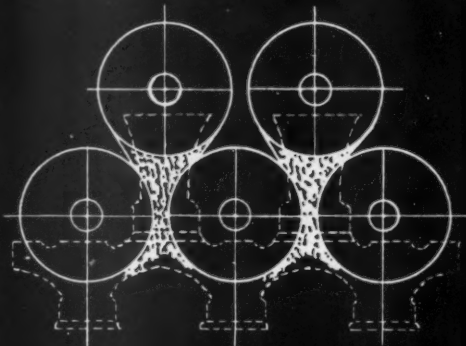
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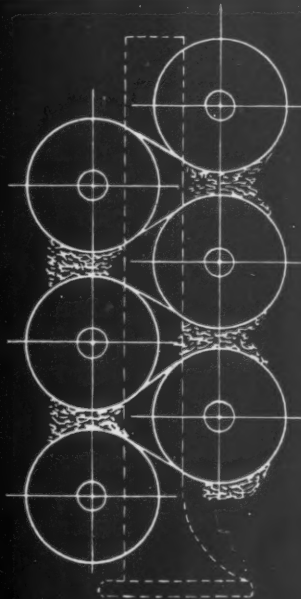
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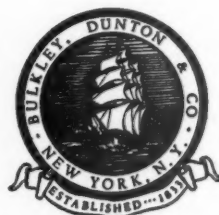
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Plan Rayon Yarn Plant For British Columbia

● European capital, combined with the technical skill of former German, Czecho-Slovak and Swiss experts, has launched a \$3,000,000 rayon project in Vancouver.

Incorporation of Vancouver Rayon Silks, Ltd., has been completed in Victoria with a capital of \$500,000, and construction of a finishing plant, which will serve as a laboratory and test factory, has already been started on the north shore of Burrard Inlet. A site consisting of 32 acres formerly occupied by Capilano Sawmills has been purchased on the waterfront, and in addition to the finishing plant it will ultimately serve as the location of a \$2,500,000 rayon yarn mill.

Paul Zuest, with long experience in the rayon industry in Czecho-Slovakia and Hungary, has been engaged as factory manager. He left for London July 9 to complete financing details and engage a few key technical men who will act as the nucleus of the personnel until local men have been trained to fill their places.

Most of the money for the yarn mill has already been subscribed and is now in deposit in Swiss banks, according to W. J. Davidson, Vancouver, secretary of the new company.

The finishing plant will be completed about next October, and it is expected that work on the yarn mill will be started early next spring. About 1,000 men and women will be employed when the plant is in full swing.

In the new rayon mill, B. C. Pulp & Paper Company, which recently completed a \$1,000,000 expansion and improvement program, will find a valuable new customer in home territory, as Vancouver Rayon Silks, Ltd., will purchase 50 tons of its rayon pulp daily when the plant goes into production.

The new company will concentrate on the Empire markets, which are now protected by a 33½ per cent tariff. According to Zuest, it is no more costly to ship rayon from Vancouver to London by ship via Panama Canal than to ship it from Budapest to Hamburg, as he used to do when operating in Europe.

Establishment of the Vancouver Rayon Silks, Ltd., really represents the transfer to the Pacific coast of the Moritz & Pincoff rayon sales organization of Hamburg, Germany. This corporation, with world-wide connections and thirty-two agencies, operated on a large scale in continental Europe and Mr. Zuest was associated with the organization for many years.

Conditions in Hitlerized Germany have made profitable operation almost impossible for Moritz & Pincoff, and some months ago their scouts started scanning the world for a suitable new base. Zuest came to Canada originally in 1930 when he reached the conclusion that British Columbia was favorably situated for rayon production. A. E. Kaiser, representing the Moritz & Pincoff organization, is now in Vancouver supervising construction of the finishing plant and designing the rayon yarn mill.

The Moritz & Pincoff London office

will act as selling base for the Vancouver mills. The London office is in close touch with world markets, and orders for rayon from, say, Australia and India, will be issued from London. In addition to Canada, the company hopes to do considerable business with Australia, New Zealand, the British West Indies and South Africa.

President of the company is Frederick J. Dawson, Vancouver contractor; secretary, W. J. Davidson; directors, Paul Zuest, also factory manager; Cecil Kilham, Vancouver lawyer; A. K. Shone, Vancouver, logging operator; Richard Zickel, London, of Moritz & Pincoff, represented in Vancouver by A. E. Kaiser.

Pacific Straw Operating On Full Schedule

● The mill of the Pacific Straw Paper and Board Co. at Longview is operating on full schedule and is selling the entire output of the plant, according to Arthur Zimmerman, vice-president and general manager.

At the time of writing, nothing definite had been decided on the plan for reorganization of the company, but work was being continued in an effort to evolve a plan satisfactory to all concerned, and to permit the company to start operating on a new basis.

Columbia River Buys Vancouver Kraft Mills

● A new company to be known as Vancouver Kraft Corporation is being organized in Vancouver, B. C., to take over the property of Vancouver Kraft Company on Howe Sound and when market conditions justify, resumption of operation is planned.

Meantime the sawmill in connection with the plant is being operated under lease to the Rounds lumber interests.

Appearing for the Montreal Trust Company in supreme court, Vancouver, Knox Walkem obtained a judgment against Vancouver Kraft Company and an order for the sale of the property. The sale was conducted by the registrar of the court June 14, and Columbia River Paper Mills of Portland, Ore., was the purchaser.

The price was \$500,681 and the sale to the Portland company, headed by C. W. Leadbetter, former head of Vancouver Kraft, the only bidder, was subject to a \$400,000 mortgage.

Montreal Trust Company had sued as trustee for the bondholders whose claim totalled 1,143,000 for principal and \$600,000 for interest. This was in addition to the prior mortgage registered against the property amounting to \$400,000.

The bonds were issued eleven years ago. The Vancouver Kraft Company operated the pulp mill for about seven months in 1937 until outbreak of the Sino-Japanese war prevented Japanese buyers from obtaining sufficient credits to place orders.

Eastern Paper Executives Visit Puget Sound Mills

Nine men, prominent in the pulp and paper industry of the middle west and east, spent the week from June 19th to the 25th getting acquainted with the industry on Puget Sound.

The busy week included tours of six mills, inspection of a large logging operation, a luncheon and long talk with Washington's Governor Clarence D. Martin and a yacht cruise on Puget Sound.

The party was made up of Roy K. Ferguson, president of the St. Regis Paper Company and of the St. Regis Kraft Company; Carl B. Martin, vice-president of the St. Regis Paper Company; J. A. Quinlan, traffic manager of the St. Regis Paper Company; F. E. Holbrook, manager of the Oxford Miami Paper Company of West Carrollton, Ohio; C. H. Morian, president of the Cherry River Paper Company, Richwood, West Virginia; James F.

Ryland, vice-president and general manager of the Standard Paper Manufacturing Company of Richmond, Virginia; Walter B. Sheehan, secretary-treasurer of the Missisquoi Corporation, Sheldon Springs, Vermont; Fred Enders, manager of the Bulkley Dunton Pulp Company of New York; and E. A. Thomee of the Bulkley Dunton Pulp Company.

This was the first trip to the Pacific Coast for seven of the party.

Upon their arrival in Seattle on Sunday, June 18th, they were invited to spend the week cruising on the yacht "Cadrew" by Ossian Anderson, president of the Puget Sound Pulp & Timber Company and executive vice-president of the St. Regis Kraft Company. The boat sailed for Tacoma that afternoon and in the evening the party inspected the bleached sulphate pulp mill of the St. Regis Kraft Company at Tacoma.

Joining the group in Seattle were Ossian Anderson, Walter DeLong, manager, and Ralph Roberg, sales manager of the Puget Sound Pulp & Timber Company at Bellingham; and R. M. Buckley of the St. Regis Kraft Company; Robert Evans, Seattle attorney and a director of the Puget Sound Pulp & Timber Company, joined the tour later in Everett.

Monday was given over to an all-day visit to the logging camps of the Kosmos Logging Company at Kosmos, near Morton at the base of Mount Rainier. The party covered some 40 miles of logging railroad on a speeder and obtained an excellent picture of West Coast timber and of the logging methods employed.

In the evening the party embarked on the "Cadrew" for Olympia where they were met at the dock Tuesday morning by Governor



SOME OF THE EASTERN VISITORS are included in this picture. Left to right, R. M. BUCKLEY, St. Regis Kraft Co., Tacoma; WALTER DeLONG, Manager Puget Sound Pulp & Timber Co., Bellingham (kneeling); E. A. THOMEE, Bulkley Dunton Pulp Co., New York; ROBERT EVANS, Seattle attorney and a director of the Puget Sound Pulp & Timber Co.; C. H. MORIAN, President of the Cherry River Paper Company, Richwood, West Virginia; F. E. HOLBROOK, Manager of the Oxford Miami Paper Co., West Carrollton, Ohio; WALTER B. SHEEHAN, Secretary-Treasurer of the Missisquoi Corporation, Sheldon Springs, Vermont; ROY K. FERGUSON, President of the St. Regis Paper Company of New York and the St. Regis Kraft Co. of Tacoma; and FRED ENDERS, Manager of the Bulkley Dunton Pulp Company, New York City. Mr. Morian and Mr. Enders are holding the 30 pound King salmon, trophy of the party's cruise on Puget Sound.

Clarence D. Martin. Governor Martin took them on an inspection tour of the State Capitol and then gave an informal talk in his office on the State of Washington's vast resources, its cheap power, its unexcelled shipping facilities and other advantages making it an ideal location for industrial development. The easterners were impressed with the Governor's able outline of Washington's advantages and expressed themselves to the effect that Washington was fortunate to have a man of Governor Martin's calibre at the head of the state's government.

The Governor and his son, Dan, were entertained at luncheon on board the "Cadrew." Late in the afternoon the yacht sailed for Everett.

Wednesday morning was devoted to tours of the three mills in Everett, the Everett Pulp & Paper Company, the Soundview Pulp Company's bleached sulphite pulp mill and the unbleached sulphite mill of the Pulp Division, Weyerhaeuser Timber Company. Embarking again on the "Cadrew" the party cruised through Deception Pass to Port Townsend where they toured the kraft pulp, paper and board mill of the National Paper Products Division of the Crown Zellerbach Corporation. In the evening the boat cruised to Dungeness where the men tried their luck at salmon fishing.

The Thursday program called for a run to Victoria, a tour of the city, a game of golf on one of Victoria's famous courses and a cruise to Bell-

ingham through the San Juan Islands.

Friday was devoted to studying the design and operation of the Puget Sound Pulp & Timber Company's unbleached sulphite pulp mill at Bellingham, which was completed a year ago and to a game of golf in the late afternoon.

The night was spent on the "Cadrew" as the ship headed for Seattle, docking at the Seattle Yacht Club early Saturday morning. Golf at the Broadmoor Golf Club was followed by a luncheon at the Rainier Club.

During the luncheon the easterners thanked Mr. Anderson for a most enjoyable and instructive week and presented him with a silver platter as a token of their appreciation for his courtesy to them while they were in the Pacific Northwest. Each expressed his pleasure at being able to make the trip and having the opportunity to obtain a quick view of the Pacific Coast pulp industry and its possibilities.

In the afternoon the party attended the opening of the Longacres racetrack and in the evening a dinner was held at the Washington Athletic Club. On Sunday, June 25th, the party split up some returning directly east and others going home via California.

Tipka Returns From Eastern Trip

● Vern Tipka, research chemist for the Hawley Pulp and Paper Co. at Oregon City, returned to the mill July 6 after a trip of more than a month through the

East. He drove to New York, where he visited the World's Fair, and visited a number of Eastern mills while away.

Road Now Open for Reorganization

● A petition by the Tumwater Paper Mills Company for dismissal of a reorganization plan which has been in operation for several years was granted in federal court in Tacoma last month. Its effect will be to clear the way for a new reorganization following foreclosure by holders of preferred claims against the company.

Nils Teren, executive of the company, has told Pacific Pulp & Paper Industry that future reorganization plans for the company are still in the formative stage, and are now being outlined, but that at the time of writing nothing definite had been decided as to the form which it would take.

B. C. Pulp Has Both Mills Operating

● For the first time in more than a year both mills of B. C. Pulp & Paper Company—at Port Alice and Woodfibre—are in operation, producing between them about 450 tons of bleached sulphite pulp daily.

Orders from Japan were primarily responsible for the resumption of production at the Port Alice mill late in June, which had been closed since April, 1938. How long it will continue in production is still undetermined, according to President Lawrence Killam, who hopes that market conditions will warrant an indefinite period of activity.

The company's Woodfibre mill has been operating steadily since February.

Shortly before both mills were shut down they had been overhauled and reconditioned with new equipment at a cost of nearly \$1,000,000, so that they are now in better shape than ever before to take care of any demand that may materialize.



Reading the paper is F. E. HOLBROOK, Manager of the Oxford Miami Paper Company, West Carrollton, Ohio; In the center is CARL B. MARTIN, Executive Vice-President of the St. Regis Paper Company of New York; and on the right, JAMES F. RYLAND, Vice-President and General Manager of the Standard Paper Manufacturing Company of Richmond, Virginia.

Can "Monopoly" Be Charged In the Face of These Facts?

WHEN we read of the Department of Justice's announced intention to hold a grand jury investigation of the practices of Pacific Coast newsprint producers and distributors on the grounds of suspected monopoly, we decided to look into the matter, for the charge didn't ring true.

We couldn't understand the monopoly idea, for we had been hearing too much in recent years about the competition of Swedish and Finnish newsprint in California, Oregon and Washington to believe that a monopoly existed.

The Department of Justice judging from the announcements by Thurman Arnold, Assistant United States Attorney General in charge of anti-trust activities, seems to think that the similiarity in prices among Canadian and American producers indicates agreement and monopoly. It indicates instead, to those familiar with the newsprint industry's struggles to keep alive, a commonsense attempt to obtain a selling price sufficient to cover costs. And even at the \$50 price of today the newsprint manufacturers are not making any fat profits. Most of them are barely squeezing by.

It has been such an unprofitable business that even the newspaper publishers in the South were reluctant to put their own money into the Southland Paper Mills, the first venture to produce newsprint from Southern pine. Despite claims of low cost production they were wary and those who finally invested did so to a limited extent, allowing the Reconstruction Finance Corporation to carry the major load.

But the American producers of newsprint constitute a very small group today, producing about 27.3 per cent of the newsprint consumed in the United States in 1938 as compared with 76.3 per cent of the total in 1915. Exports of newsprint have dropped from a high of 111,000 tons in 1919 to 6,000 tons in 1938. Last year the American production of 820,000 tons was the lowest annual production in 35 years.

In 1938 the United States imported 2,275,000 tons of newsprint. Of this total 1,938,000 tons or 85.18 per cent came from Canada; 243,000 tons or 10.68 per cent from Europe; and 94,000 tons or 4.1 per cent came from Newfoundland.

● Europe has been growing in importance as a source of newsprint supply for American newspaper publishers largely because of lower prices. From 1,000 tons imported from Europe in 1913 the imports grew to 200,000 tons in 1923, but suffered a decline to 96,000 tons in 1929. Since that year they have been rising, reaching a high point of 294,000 tons in 1937 and dropping back to 243,000 tons last year, the same as the imports in 1936.

Upon reading the Department of Justice's charges relative to monopolistic practices by American and Canadian newsprint manufacturers on the Pacific Coast we investigated the Pacific Coast newsprint imports for 1938.

The figures divulged that European sources are even more important to Pacific Coast publishers than to those in other sections of the country. While Canada supplied 85.18 per cent of the total newsprint imported

by the United States in 1938, she supplied but 55.63 per cent of the newsprint imported by the California, Oregon and Washington customs districts. While European nations supplied but 10.68 per cent of the total newsprint imports for the country as a whole, they furnished 44.37 per cent of the Pacific Coast imports (from Sweden, Finland and Norway).

We also found upon investigation of the official import figures (obtained from the Bureau of Foreign & Domestic Commerce, United States Department of Commerce) that Sweden supplied 24.65 per cent; Finland, 17.69 per cent, and Norway, 2 per cent of the Pacific Coast newsprint imports.

But what is more important from the point of view of "monopoly" was the wide disparity in prices as declared to the United States Customs upon the importing of this foreign duty-free newsprint. From an average of \$47.21 per ton for the Canadian newsprint to the \$35.73 per ton for the Finnish newsprint the price varied \$11.48 per ton.

If a Pacific Coast newspaper publisher didn't want to pay the Canadian price he saved himself quite a sizeable sum by buying Finnish newsprint or Swedish paper which was \$6.76 less per ton than the Canadian.

In view of the tonnage imported from European nations into Pacific Coast ports and the variations in prices, the Coast market is clearly a "free" market, not dominated by either domestic or Canadian newsprint producers.

The Department of Justice may want to know why the American and Canadian prices are so much higher than the Finnish and Swedish prices. It may want to know why newspaper publishers cannot have \$35 American newsprint.

The answer is that they can have this price if the Department of Justice will nullify the Wage and Hours Act, eliminate unions and generally reduce the American standard of living.

On page 65 of the May, 1939, Annual Review Number is a little chart showing the average hourly wages of pulp and paper mill employees in the more important producing countries. The Pacific Coast mills pay the highest hourly wages in the world, an average of 79.6 cents per hour, while Sweden's hourly average is 29.5 cents and Finland's is 14.8 cents. If that isn't enough of an answer then the matter of cheap Swedish shipping should be investigated, and finally, the very important problem of depreciated currencies which we illustrated in our January, 1939, number. The currency situation gives Sweden and Finland an advantage of several dollars per ton.

● After studying the Pacific Coast newsprint situation, the imports and the prices in the light of the Department of Justice's charges of "monopoly", we are wondering what the newsprint investigation is all about. Our wonder is greatly increased when we read in the Department's announcement that upon investigation of the newsprint industry the Federal Trade Commission found only two of the 8 individual and only 14 of the 45 corporate defendants in the 1917 cases are now members of the industry (at that time the FTC charged

the industry with monopoly and a consent decree was entered). The American newsprint industry is a dying industry, dying from duty-free imports and from persecution by a well organized "monopoly," the American Newspaper Publishers Association.

Why is the Department jumping on a dying industry, one that has been steadily losing ground since 1926? Could the move be political? Could it be to curry

favor with the American press which has been largely antagonistic to the Roosevelt administration? An important election is coming up and it would help to have the newspapers realize the New Deal is on their side. What difference does it make, for the newsprint manufacturing industry is small and growing smaller each year? A little persecution won't hurt it and will please the newspaper publishers tremendously.

Where Is This Pacific Coast Newsprint "Monopoly"?

In the Department of Justice's announcement that it was undertaking a probe of monopolistic practices in the newsprint industry, and that a grand jury investigation would be held on the Pacific Coast, Assistant United States Attorney General Thurman Arnold was quoted in the May, 23rd, issue of Editor & Publisher, as saying in part:

"If it is finally established that agreements in restraint

or trade at present govern business in newsprint throughout the Pacific Coast area, criminal proceedings should result in the establishment of free competition. As a consequence, prices and trade practices will be determined by the unhampered interaction of economic forces and lower prices may be reasonably expected. Newspaper publishers in that region will be given access to a free newsprint market."

IS THE NEWSPRINT MARKET NOW CONTROLLED?

A look at the imports of duty-free newsprint through Pacific Coast Customs Districts will quickly show whether the market is "free" or "controlled." Here

is the import data from the Bureau of Foreign & Domestic Commerce, United States Department of Commerce.

Pacific Coast Newsprint Imports in 1938, 142,917 tons, valued at \$6,200,913 (California, Oregon and Washington Customs Districts).

Of this total, the Pacific Coast States Imported—

From CANADA	79,507 tons	Valued at \$3,753,703, or 55.63% of the total
From SWEDEN	35,237 tons	Valued at \$1,425,439, or 24.65% of the total
From FINLAND	25,276 tons	Valued at \$903,305, or 17.69% of the total
From NORWAY	2,897 tons	Valued at \$118,467, or 2% of the total

By dividing the total value by the total tonnage we obtain the average value per ton—

From CANADA.....	\$47.21 average value per ton
From SWEDEN	\$40.45 average value per ton
From FINLAND	\$35.73 average value per ton
From NORWAY....	\$40.89 average value per ton

ISN'T THIS "FREE COMPETITION"?

With the price of imported newsprint ranging from \$35.73 to \$47.21 per ton and with Canada taking 55.63 per cent and European nations 44.37 per cent, compe-

tition is obviously free in the Pacific Coast market and there is no monopoly.

Ocean Falls Completes Big Improvement Program

● As part of a large construction and improvement program carried out during the past year, Pacific Mills, Ltd., British Columbia subsidiary of Crown Zellerbach Corporation, has insured itself against future water and power shortage.

Pacific Mills is located at Ocean Falls, one of the wettest areas in British Columbia, with an average annual rainfall of nearly 180 inches, but the steady expansion of the company's production has in recent years placed a heavy load on available water resources.

Two or three years ago it was found necessary to shut down two of the machines for several weeks at a time when the paper market was absorbing all that the mill could produce. It was decided then to put into effect changes that would make a recurrence of such a situation impossible.

One important move in this direction was the installation of a Tomlinson unit in the kraft mill. This unit, manufactured by the Canadian firm of Babcock, Wilcox & Goldie McCulloch, Ltd., effects an economy in power by making it possible to use the same heat twice in the kraft process.

Pacific Mills has also installed a 600-pound steam turbine generator, a British Thomson, Houston Company plant of 2500 kilowatts. This unit is in addition to a 3000 kilowatt General Electric steam turbo generator which was installed several years ago.

The big new warehouse at the Ocean Falls waterfront has been completed and is in regular use. In order to make maximum use of the space the kraft and newsprint rolls are piled one above the other by two Elwell Parker gas electric jitney units.

In addition to newsprint, kraft, tissue paper and specialties—the latter manufactured chiefly at the company's converting plant in Vancouver—are assuming a larger share in total production. Kraft is being sold in world markets, and recently has found a sale in such distant countries as South Africa and South America. But company executives regard the Orient as one of their most profitable potential outlets and are expecting a big recovery in that market when war conditions have passed.

For heat, Pacific Mills furnaces can now operate 100 per cent with hogged fuel, making it possible to cut down on fuel oil imports considerably. The company uses all its own refuse in the hogging plant and brings in large quantities of it by barge from Nootka Wood Products and other west coast sawmills.

Canadian Pulp Exports Ahead of Last Year

● Exports of wood pulp from Canada continue to show an increase over 1938 in tonnage. During the first five months of 1939 Canada exported 234,274 short tons of wood pulp of all grades with a declared value of \$11,011,475, according to the official figures released by the Dominion Bureau of Statistics.

This was a gain of 21,195 tons or 9.9 per cent over the total of 213,079 short tons exported in the first five months of 1938. However, the value of the 1938 exports was \$11,722,449, or \$710,974 more than the value of the larger exports this year.

Propose to Stage Paper Festival

● Public minded citizens of Camas, Wash., home of the Crown Willamette Paper Company's big specialty mill, are proposing the staging of an annual Paper Festival in the paper making city.

Camas is noted for the success of their celebration affairs, having for years put on various annual fetes that have attracted attention and visitors from far and near. It is believed that this new idea will outclass all previous endeavors.

Meetings will be called to discuss the matter and to arrange details. It is planned that the first annual Paper Festival will be held in 1940.

Start Investigation of Book Paper Manufacturers

● Hearings on the Federal Trade Commission's charges that the Book Paper Manufacturers Association and more than a score of its members are guilty of conspiracy to control prices of book paper were opened on June 29th at the Commission's offices, 45 Broadway, New York City. Charles F. Driggs is the trial examiner handling the hearings.

Various exhibits were introduced, including membership rolls, by-laws and records of the association. The government contends that the book paper manufacturers, through their trade association, set up a system for controlling and maintaining prices and divided the country into four zones in which members of the group set prices in line with a predetermined scale. According to the complaint, the scale of prices was set with the price in zone No. 1, (New York area) fixed as a base, and quotations in zone No. 2, 20 cents higher, those in zone No. 3, 40 cents higher, and in zone No. 4, 60 cents higher per hundred pounds than the base.

Oriental Market Will Revive, Says McKenzie

● Immediate market prospects in the Far East are obscure, but when China and Japan are relieved from their preoccupation with military operations there will be a strong recovery in pulp and paper demand across the Pacific, in the opinion of H. J. McKenzie, manager of Export Sales Company, representing Powell River Company and Pacific Mills, Ltd., British Columbia's two big newsprint producers in the Far East.

Mr. McKenzie has just returned from three months' visit to Japan and China during which he made a thorough survey of the pulp and paper markets and the general business situation. He found noticeable improvement in the Shanghai area as compared with conditions prevailing during his trip a year ago.

China is beginning to buy small quantities of paper in this market, reported Mr. McKenzie, but volume is negligible. Japan is buying no newsprint, but is taking some pulp for rayon manufacture.

Japanese importers would be glad to purchase newsprint as well as increased quantities of pulp in the Pacific Northwest, but exchange restrictions prevent them from doing so," said Mr. McKenzie. "Japan is importing nothing that she can possibly do without these days, and that policy will continue so long as the cost of war must be borne. In the meantime Japanese paper consumers are economizing in the use of paper. Under normal conditions Japanese are liberal users of paper, but in the stores Japanese merchants are frugal with their wrapping and the newspapers have greatly reduced the size of their editions.

"Japan is doing its best to get along with domestic pulp and paper production. Most of the pulpwood is from Saghalien, Manchukuo and Hokkaido, but when war conditions pass I feel confident that orders will come across the Pacific both for pulp and paper. I doubt whether the spread between the cost of mechanical pulp and newsprint paper would justify the Japanese in importing pulp for newsprint manufacture, although they will continue to buy pulp in this country for rayon and the higher grades of paper."

Mr. McKenzie feels that the next few months will carry both political and economic affairs in the Orient to a crisis; they cannot go on as they are now indefinitely. He believes that much will depend on what happens in Europe and whether the United States takes a more aggressive stand against Japanese interference with foreign powers' rights in China.

"Whatever happens, the old technique of trading in the Orient as we knew it before the war and for generations, has passed never to return," said Mr. McKenzie. "I am not yet prepared to say whether or not Japan will emerge as the dominant trading power, but there will certainly be a sweeping change in the whole trading setup.

"Personally, I do not look for a permanent decline in our shipments to the Far East. To the contrary, they should be greatly increased when conditions become more stabilized. The war in China has pushed back the frontier westward, opened up a vast new country and created a potential market that may some day be enormously rich."

Sealright Develops New Paperboard Can for Frozen Foods

● An experimental commercial pack of sugared strawberries in a new type of 30-pound container developed by the Sealright Company, Inc., recently was put up for the R. D. Bodle Company, Seattle. The container consists of a kraft paperboard can, which holds a Pliofilm bag. The can is 9 inches in diameter and 14¾ inches high. It is delivered to the packer in flat form and is shaped on a forming machine, which applies a reinforcing ring at the top and at the bottom.

The bottom of the can is formed by a paperboard disk, smooth on the inside and corrugated on the outside, which is supported in place by the metal ring. A solid fiber paperboard lid is placed over the top of the can after the bag has been filled and sealed.

The Pliofilm bag, which is delivered ready made in flat form, is opened by hand and placed in the paper can. Berries mixed with sugar are then placed in the bag, which is heat sealed. After the top of the bag has been folded down below the top of the can, the bag is punctured to permit escape of air and the puncture is resealed.

Several weights of Pliofilm were used in the experimental pack. Experiments were made also with a manila paper bag coated on one side with Pliofilm, designed for use in the same manner as the Pliofilm bags. The container is designed for shipping in standard individual shipping cases. The pack was put up under direction of Victor Silliman, from the Chicago office of the Sealright Company, Inc., and E. F. Eller, Northwest representative.

Ted Kepner Appointed Safety Supervisor

● Ted Kepner has been appointed personnel and safety supervisor for the logging operations of the Crown Zellerbach Corporation in the Northwest, taking over his new duties in June. He formerly was office manager for the company's logging operations at Cathlamet, Washington. He will work under Ed Stamm of the timber department, and Martin Mammen, safety supervisor for the company.

The new office manager at Cathlamet is Carl Austin, who comes from the West Linn office to replace Mr. Kepner. From Port Angeles, C. L. Howard has been transferred to the West Linn office to replace Mr. Austin.

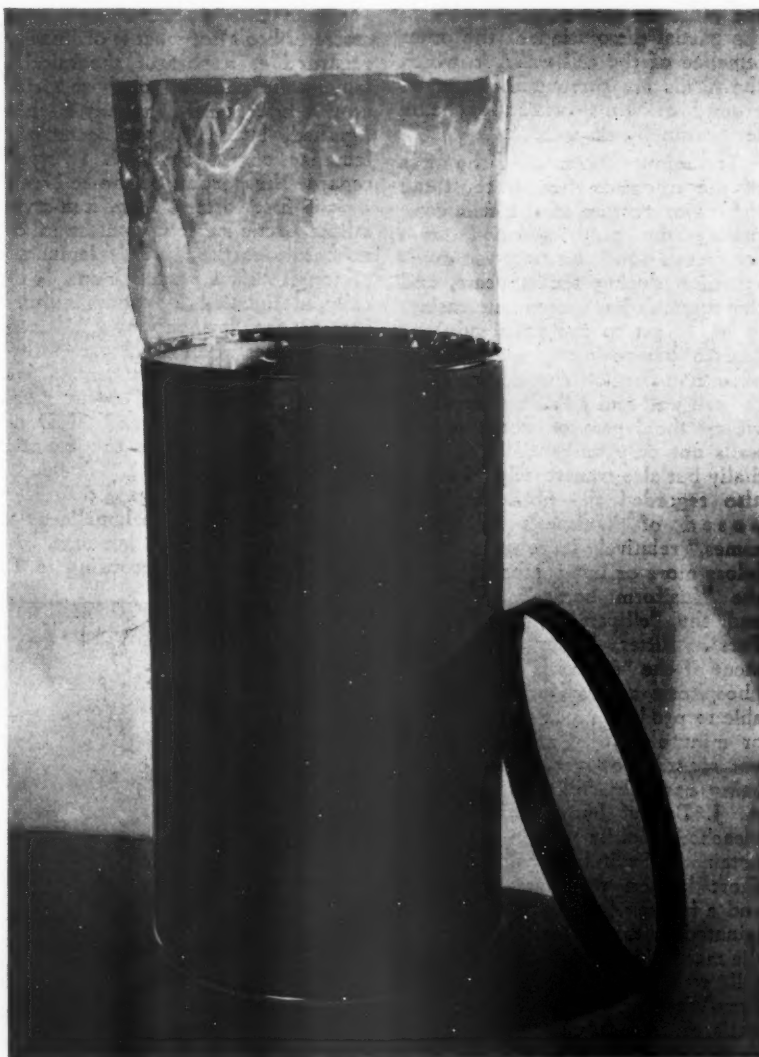
Rival First Aid Teams to Compete at Olympia

● First aid teams from the Crown Willamette Paper Co., Camas, Wash., division of Crown Zellerbach Corporation, and from Rayonier Incorporated, are scheduled to take part in the state-wide safety and first aid contest which will be staged July 29 at Olympia, Wash. These teams were definitely scheduled at the time of writing, but it is possible that other teams from the paper industry will be entered before the final deadline.

Heron Speaks At Reed College

● During the Institute on Northwest Affairs, which started at Reed College, Portland, Ore., on July 10, A. R. Heron, director of industrial relations for the Crown Zellerbach Corporation, was one of the featured speakers on July 17. His topic was "The Employer's Point of View."

On July 12, E. P. Stamm, logging superintendent for the same company, spoke for the private operators on "Sustained Yield."



NEW TYPE PAPERBOARD CAN to hold 30 pounds of frozen food, developed for experimental testing by the Sealright Company, Inc., of Fulton, N. Y., and now being tested by a Pacific Northwest packer. The lightweight spiral wound cylinder is apparently of ordinary kraft with semi-bleached kraft liner. It is creased for shipping flat. In packing plant a special machine forms cylinder, applies metal bands and inserts bottom disk which is corrugated on outside. Liner bag is of Pliofilm heat sealed after filling. The top, of solid board, fits tightly over the metal ring.

Cooking Problems And the Cell Walls of Wood

by BROR L. GRONDAL*

THE necessity of keeping chips intact during the cooking process is well recognized, and is of especial importance in the sulphate process when vertical rotary digesters are used. Carefully controlled laboratory cooks by Hagglund¹, coupled with microscopic examinations of the pulps have placed the reason for the quick degeneration of the more or less isolated fibers in the partial dissolution of the outer lamellae of the cell walls, in which the fibrils are presumably wrapped around the cells instead of being longitudinally disposed.

The minute structure of the walls of the tracheids (which constitute the major portion of the cells comprising the pulp obtained from coniferous wood) has received much attention during recent years, and this research has become increasingly important to the pulp industry. Ludtke² has postulated the existence of a non-fibrillar sheath enclosing the cell wall and a "skin system" dividing the layers of fibrils in the walls not only tangentially and radially but also transversely. He has also regarded the fibrils as composed of Weisner's "dermatosomes," relatively large units of cellulose more or less comparable with the "fusiform bodies" of Ritter³ and the "ellipsoidal particles" of Farr⁴. Ritter, however, by treatment of the "fusiform bodies" with phosphoric and sulfuric acids was able to produce much smaller units, or minute spheres, which he does not regard, however, as necessarily being basically spherical in shape. A. J. Bailey⁵ by comminution of bleached sulphite pulp in a ball mill obtained "cylindricoids" or very short broken remnants of fibrils, and a hydrogel that presumably originated in the material comprising the matrix in which the fibrils in the cell wall are perhaps imbedded. Frey-Wessling⁷ postulates the cell walls of tracheids and other fibers as being made up of anastomosing microfibrils forming a lattice of cellulose into which swelling agents

and even colloidal dye-stuffs, such as congo-red, can penetrate.

I. W. Bailey⁸ has recently attempted to stabilize the terminology relating to the grosser components of the cell wall by referring to the central portion of the middle lamella as "inter-cellular substance" and to the outer portion as "primary walls." The bi-refrangent portion (as seen with polarized light and crossed Nicols) of what is ordinarily regarded as a part of the middle lamella he chooses to characterize as the first formed, usually highly lignified, layers of the secondary lamellae of the tracheid. Wergin⁹ regards the portion of the cell wall that is first formed from non-crystalline pectic substances after mitosis occurs as the "middle lamella," although this is usually, and logically, designated by many authorities as the "primary wall." Confusion arises when this layer is designated as the "middle lamella" as well as "primary wall," as in a recent text by Eames and McDaniels¹⁰. Wurz¹¹ uses the same schematic diagram as I. W. Bailey and also appears to regard the outer portion of the middle lamella as a part of the secondary lamellae. A tertiary lamella, or according to I.

W. Bailey, the "inner layer of the secondary wall" forms an inner lining of the cell or tracheid. This lamella is usually regarded as being essentially cellulosic in nature and not highly lignified.

Despite the unfortunate confusion in terminology that exists, as has been indicated above, the fact seems well established that the portion of the cell wall between adjacent cells that readily absorbs dyes and that can be split away mechanically from the secondary lamellae (as in the manufacture of mechanical pulp), is highly lignified. A. J. Bailey¹², using a micromanipulator, dissected microtome sections of Douglas fir and isolated enough of this "middle lamella" to obtain a reasonably pure sample of sufficient weight (0.521 mg.) to determine by microchemical analysis, its lignin content, which proved to be 71.38 per cent. A second sample was accumulated after months of work, and the pentosan content determined by micro-analytical procedure. This proved to be 14.21 per cent.

● Since the middle lamella consists in such large measure of lignin and pentosans, it serves to prevent the cooking liquor from attacking the outer layers of the secondary lamellae when whole chips are cooked. In an "ideal" sulphite cook, the initial stage should involve the penetration of the chips by cold acid. In practice, this can only be accomplished through a preliminary pressure treatment or by evacuating the air from the digester for a considerable period of time before the acid is introduced at atmospheric pressure, and then allowing a further period of time for the acid to penetrate. Commercial treatment of chips in this manner is not suggested, although pre-impregnation of chips would not be wholly impracticable. The acid penetrates from tracheid to tracheid presumably through the bordered pits as well as through the simple pits of the ray cells to the tracheids. The rate at which liquids can penetrate through pits is not positively known. Stone¹³ has prepared excellent photomicrographs of the tori and closing membranes in Douglas fir, and while



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radical striations in the closing membranes are sharply defined at a magnification of 4,500 diameters, he could find no positive evidence of the existence of radial checks or pores. It is probable that the pit membranes function as semi-permeable membranes. The time required to impregnate chips by pressure is not great, and many experiments, such as those conducted by Wurzburg¹¹ prove the advantages of such pre-impregnation.

The second stage in the sulphite cook, induced by a rising temperature, should involve the combination of the bisulphite and the excess of sulphurous acid with the lignin in the cell walls to form bound lignosulphonic acid and lignin sulphonate. The third stage, in which the maximum temperature is reached, should involve the dissolution of the bound lignosulphonic acid and the hydrolysis of other lignin-sulphur complexes and their removal by diffusion outwards through the chips. The two latter stages mentioned can be discerned in the progress of the normal sulphite cook, although the stages intergrade to a considerable degree. In the progress of the usual sulphite cook, the

second stage of the cook proceeds to completion over a comparatively large area of the chips where the lignin of the middle lamella of cells is exposed. The number of cells in this condition exposed to the direct action of the cooking liquor is so large in a digester of ordinary dimensions that an attempt to enumerate them would involve sums of astronomical proportions. Before the chips are fully penetrated, the third stage of the cooking process has already been reached over these areas, and the liquor penetrating the chips therefore contains a considerable quantity of dissolved lignosulphonic acid.

● As the acid penetrates the chips it immediately begins to react with the lignin in the secondary lamellae, and becomes progressively weaker in its action as it diffuses through the cell wall of each tracheid outward toward the middle lamella. As it finally reacts with the middle lamella, its activity has dropped to such a low rate that the cellulose fibrils in the outermost layers of the secondary lamellae are protected, permitting them to retain their ability to hold the cell wall together as

a wrapper so that a pulp of maximum strength is obtained. Hagglund¹⁴ has determined that the hydrogen ion concentration within the cell wall of the fiber during the cook is the dominating factor influencing the strength of the resulting pulp, and he further notes that the solution of the lignin in a normal cook is a monomolecular reaction; that is, the rate of the reaction at any instant is proportional to the amount of lignin remaining. It is interesting to note that Hagglund finds that the length of chips of spruce (*Picea excelsa*) is, within reasonable limits, of little importance, and that the cooking acid diffuses into the chips and the lignosulphonic acid passes out of the chips in a radial or tangential direction through the wood. He also found that flat-grain chips cooked much faster than edge-grain chips. Attempts to cook thick chips resulted in the condensation of the lignosulphonic acid in the interior of the chips due to excessively high acidity as a result of the difference in the diffusion rates of sulphurous acid and bisulphite.

Hagglund and Arnold¹⁵ found that the formation of the bound lig-



FIGURE 1. Cross section of Western hemlock wood showing structure of the cell walls. X 1888

FIGURE 2. The same cross section shown in Figure 1, photographed with polarized light between crossed Nicols. The bright lines (bi-refringence) indicate the layers in the secondary lamellae that must not be damaged in cook. X 1800.

Dull chipper knives not only raise the cost of chipping by consuming more power but they also reduce the strength of the finished pulp.

In this paper Professor Grondal points out that the hammering effect of dull chipper knives breaks down the cell walls and increases the percentage of short fibers.

nosulphonic acid in the chips takes place in two stages, for there is a group in the lignin that reacts very readily with sulphurous acid. This reacts first, and is followed by a relatively slow combination of the remaining lignin with the bisulphite until the sulphur content of the lignosulphonic acid formed is doubled. During the third stage of the "ideal" cook, or the extraction stage, the rate of solution of the latter type of lignosulphonic acid is greater, and this explains why the yield of pulp is favorably influenced by a higher bisulphite concentration in the cooking acid. A partially sulphonated lignin—formed by the action of sulphurous acid on the lignin—is much more easily resinsified than one that is fully sulphonated, and this, they conclude, explains why under certain circumstances a black cook is more apt to occur in the early stages of the cook than in the later stages. Brown and Brauns¹⁶ have also shown that the sulphonation of lignin occurs in two stages, for by suitable methylation the formation of a soluble lignosulphonic acid can be prevented by apparently blocking out a hydroxyl group in the lignin. Brookbank¹⁷ found that by proper attention to chip penetra-

tion and by allowing a sufficient time for sulphonation a satisfactory sulphite pulp can be produced from Douglas fir. Mottet¹⁸ compared the rate of sulphonation of Western hemlock, Sitka spruce and Douglas fir by cooking very finely ground wood flour, and found that the rate of sulphonation of the first two species mentioned is approximately the same, but that the lignin of Douglas fir sulphonates with more difficulty. McGovern and Chidester¹⁹ found that by impregnating the chips of Western hemlock with acid, a rapid temperature rise did not prevent a satisfactory cook and that the loss in strength in the resulting pulp was negligible.

In Sweden, the loss of wood in barking is an important problem, and therefore barking methods are given much attention. Treatment of the wood before and during barking in drums with hot water softens and loosens the bark, but it had been alleged that wood prepared in this manner yielded pulp that was often as much as 20 per cent weaker, all strength factors considered, than wood barked by other methods. At first glance, it seemed impossible that this could be true, and Hagglund¹⁴ found no reduction in the

strength of pulps produced from hot, wet wood when the chips were cut by hand for his laboratory control cooks. Tests on pulp produced under commercial conditions in a pulp mill yielded strength data contradictory to the laboratory cooks, as the pulp resulting from the cooking of chips that had been produced from hot, moist wood was decidedly weaker than that produced from wood chipped cold. Hagglund therefore concluded that:

● "It must be due to a weakening of the primary lamella. As has been shown previously, the outermost layers of the wood determine the strength of the fiber. These (and the primary lamella) are exceedingly sensitive to chemical action, and it is probable that when hot, moist wood is chipped, the mechanical effect of the chipping makes the fibers more or less slip apart, so that the outermost layers are damaged. Further investigation of this matter is under way."

Bildt²⁰ tells of experiments made at Hylte, in Sweden, by Lundgren and Rosen, in which blocks of wood were crushed longitudinally or beaten with hammers with and without previous heat treatment. These blocks were reduced to chips and cooked, and the resulting pulps tested and examined. Photomicrographs of the pulp produced in this manner show that the tracheids are broken into short sections, forming a very weak pulp. On the other hand it was found that hot, moist

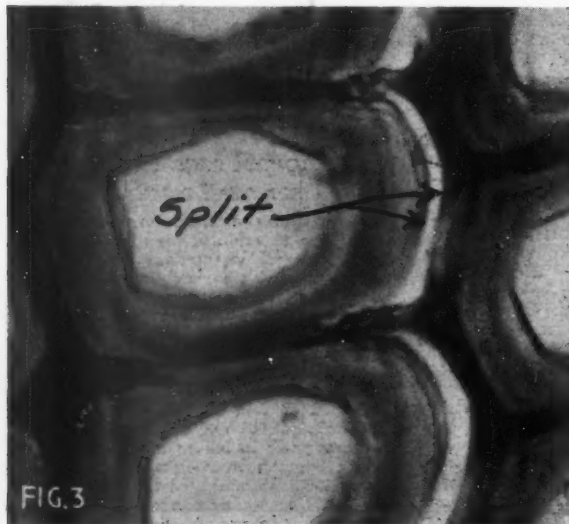


FIG.3

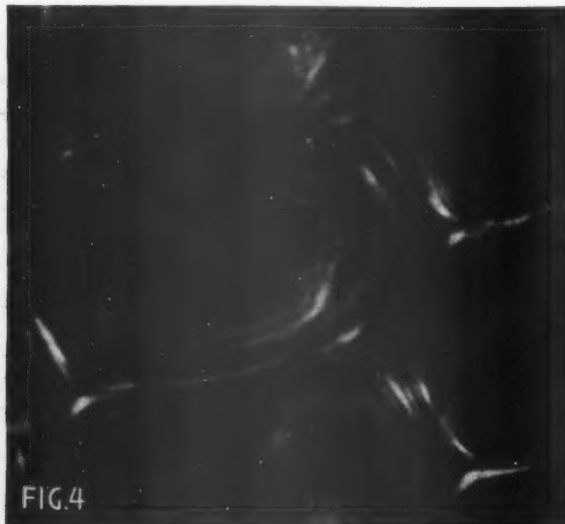


FIG.4

FIGURE 3. Cross section of Western hemlock wood showing a split between the cell walls. X 1800 \times

FIGURE 4. The same cross section shown in Figure 3, photographed with polarized light between crossed Nicols.

wood, not crushed or hammered and carefully chipped by hand, cooked with no loss in strength.

Before discussing the effect of chipping practice upon the strength of pulp, reference to the accompanying photomicrographs of Western hemlock (*Tsuga heterophylla*) will be made. It will be noted by comparing Figures 1 and 2, that the birefringence exhibited by the lamellae when photographed with polarized light between crossed Nicols, as shown in Figure 2, is confined to the outermost layer of the secondary lamellae, in which the fibrils are oriented at an acute angle. The flare of light of the bordered pit-pair is due to internal reflection in the pit cavity. The section is 6 microns thick, and it was lightly stained with water soluble safranin.

Figure 3 illustrates a section of Western hemlock 18 microns thick, stained with Haidenhain's iron-haematoxylin after first mordanting with ferric ammonium sulphate followed by water soluble safranin. The split in the section shows how the secondary lamellae part from the middle lamella, and figure 4 shows how birefringence is apparently exhibited by portions of the secondary lamellae as well as by the outer portion of the middle lamella when photographed with polarized light between crossed Nicols. Rotation of the slide on the stage of the microscope produced a variety of effects with polarized light and crossed Nicols indicating that the absorption of stains appears to introduce complications when polar-

ized light is used. These effects are not produced when unstained wood is examined with polarized light.

Figure 5 is a tangential section of Western hemlock, in which the cell wall is apparently quite normal in appearance. When photographed with polarized light between crossed Nicols, however, as shown in figure 6, fracture planes appear as prominent bright lines extending across the cell wall. The section illustrated is 6 microns thick. It was stained with water soluble safranin.

● By referring to Figure 1, it will be noted that if acid enters tracheid "b" from tracheid "a" by passing through the closing membrane "c," it must pass through the secondary lamellae of cell "b" (which contain a considerable amount of lignin), before it can attack the middle lamella "d". The possibility that some of the acid will attack the middle lamella from the pit cavity also presents itself. If the wood is badly cracked and splintered in chipping, so that cracks like those shown in Figure 3 occur, the middle lamella will be acted upon very vigorously, as Hagglund suggests, but conditions existing in such cracks will not be as severe as those affecting the surfaces of the chips, and the writer does not feel that splintering and cracking furnishes an adequate explanation of the marked reduction in the strength of the pulp that was observed in the Swedish pulp mill.

On the other hand, if compression failures are present in the cell walls, such as those revealed in Fig-

ure 6, the acid will penetrate into the cell wall through these injured areas, and as the local hydrogen ion concentration in these planes will be relatively high before the cook is completed, shear planes through the secondary lamellae will be developed that will cause the fibers to break into short segments. Such failures can be caused to develop by striking short sections of green wood with a hammer.

Under ordinary circumstances, compression failures of the type illustrated will not develop during the chipping of green Western hemlock at normal moisture contents, although examination of chips cut when the knives in the chipper were very dull disclose their presence in a considerable proportion of the wood. On the other hand, if the extremely wet streaks of wood containing as much as 300 per cent of moisture (based on the dry weight of the wood) common in the heartwood of Western hemlock, are subjected to the shock and beating effect of dull chipper knives, compression failures of this type develop in such great numbers that the pulp produced from such chips will be very weak. Western hemlock is always chipped cold, and as chipper knives are changed before they become so dull that a marked increase in power consumption becomes apparent, this type of defect will probably never become an acute problem in the Pacific Northwest, but it nevertheless merits the careful attention of our pulp industry.

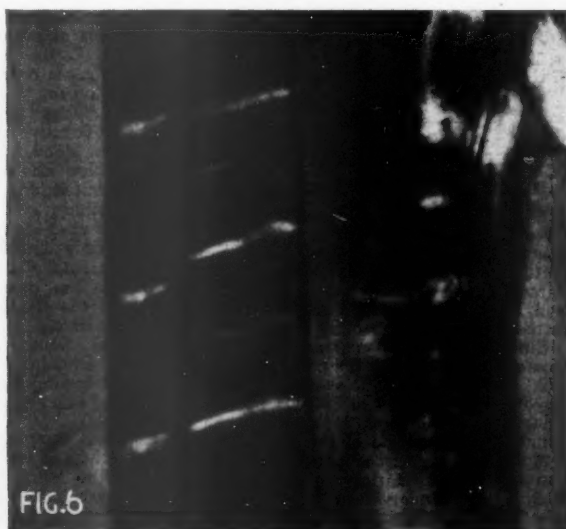
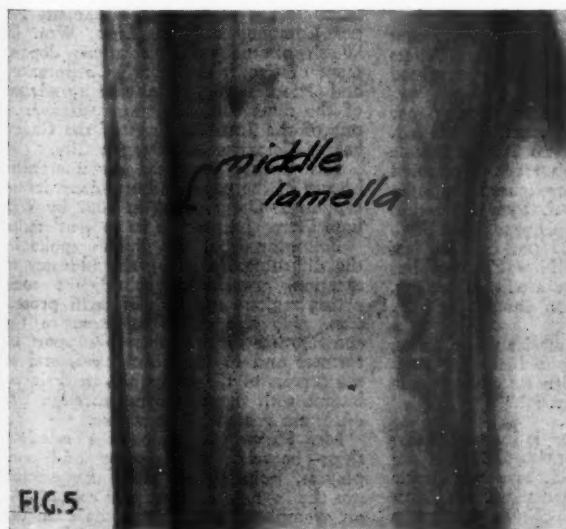


FIGURE 5. Tangential section of Western hemlock wood showing longitudinal section of cell wall, the middle lamella being clearly defined. FIGURE 6. The same section shown in Figure 5, photographed with polarized light between crossed Nicols, the bright lines indicating compression failures in the cell wall.

Literature Cited

- ¹ Hagglund, Erik, *Svensk Papperstidning*, 38, 5, p. 145, 1935.
- ² Ludtke, M., *Papier Fabrikant*, 28, 3, p. 129, 1930.
- ³ Ritter, G. J., *Ind. Eng. Chem.*, 21, p. 289, 1929.
- ⁴ Farr, W. K., *Paper Trade Journal*, 101, 13, p. 87, 1935.
- ⁵ Ritter, G. J., *Paper Industry*, June, 1934.
- ⁶ Bailey, A. J., *Paper Industry*, January, 1936.
- ⁷ Frey-Wessling, A., *Papier Fabrikant*, 36, 24-25, 1938.
- ⁸ Bailey, I. W., *Ind. Eng. Chem.*, 30, p. 40, 1938.
- ⁹ Wergin, W., *Chemiker-Zietung*, No. 43, 1937. Wergin, W., *Svensk Papperstidning*, 40, 11, p. 269, 1937.
- ¹⁰ Eames, A. J., and McDaniels, L. H., "An Introduction to Plant Anatomy," p. 20, 1927.
- ¹¹ Wurz, Otto, *Der Papier Fabrikant*, 35, No. 49, p. 481, 1937.
- ¹² Bailey, A. J., *Ind. Eng. Chem. (Analy. Ed.)*, 8, p. 52, 1936. Bailey, A. J., *Ind. Eng. Chem. (Analy. Ed.)*, 8, p. 389, 1936.
- ¹³ Stone, C. D., Unpublished thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, University of Washington, June, 1939.
- ¹⁴ Hagglund, Erik, *Svensk Papperstidning*, 39, 6, p. 95, 1936. Hagglund, Erik, *Svensk Papperstidning*, 41, 6, p. 194, 1938.
- ¹⁵ Hagglund, Erik, and Arnold, Sixten, *Svensk Papperstidning*, 40, 16, p. 387, 1937.
- ¹⁶ Brown, D. C., and Brauns, F. G., *Pulp and Paper Magazine of Canada*, 38, 11, p. 753, 1935.
- ¹⁷ Brookbank, E. B., *Pac. Pulp and Paper Ind.*, 12, 11, p. 17, Nov., 1938.
- ¹⁸ Mottet, Arthur L., Unpublished thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Forestry at the University of Washington, March, 1939. Mottet, Arthur L., *University of Washington Forest Club Quarterly*, 12, 3, 1939.
- ¹⁹ McGovern, J. N., and Chidester, G. H., *Paper Trade Journal*, 107, 13, p. 29, 1938.
- ²⁰ Bildt, Olof, *Svensk Papperstidning*, 41, 8, p. 261, 1938.

Japanese Paper Exports to United States Increase

● The United States was the only country outside of the yen-bloc area which increased its purchases of Japanese paper in the first quarter of this year as compared with the corresponding 1938 period, a report to the Department of Commerce from its Tokyo office shows.

Shipments to the American market increased from 266,904 pounds valued at 420,216 yen (\$121,900) during the first three months of 1938 to 290,004 pounds valued at 488,306 yen (\$132,900) in the January-March period of this year.

Aggregate exports of paper from Japan in the first quarter of 1939 totaled 78,383,316 pounds valued at 12,974,000 yen (\$3,530,000) compared with 54,207,146 pounds valued at 9,075,000 yen (\$2,632,000) in the corresponding period of last year.

The sharp advance in Japan's paper export trade during the first quarter of the current year compared with the cor-

responding 1938 period was entirely the result of heavier shipments to the yen-bloc countries whose share of the trade advanced from 79 per cent in the first quarter of 1938 to 90 per cent in the 1939 period.

A comparison of Japanese exports of paper, by kinds, during the first quarters of 1938 and 1939 shows substantial volume increases during the latter period in exports of printing papers, writing paper, pasteboard, packing paper, and several types of Japanese-style paper, but volume decreases in shipments of drawing paper, cigarette paper, and tissue paper.

South Africa Shows Promise As Paper Market

● South Africa is one of the comparatively new markets for British Columbia paper products that may become an important outlet for mills operating in the Pacific Northwest, according to Harry Pim, sales manager of Pacific Mills, Ltd., who has returned from an eight months' tour of the Orient, Australasia, Africa and the British Isles.

"South Africans are really interested in the products of British Columbia and, with a dependable service operated by the Silver Java line, they should be a significant factor in future export sales," said Mr. Pim.

Pacific Mills is now shipping kraft paper to the Cape and expects to sell fruit wrap there in considerable volume, just as it has done in the past in Australia.

"With the Orient virtually closed to paper and paper specialties because of war conditions, it was necessary to look to other parts of the world for markets," said Mr. Pim, explaining the primary reason for his tour. Japan is now buying pulp, presumably for rayon manufacture, but is buying no newsprint and China's purchases have been negligible owing to blockades and other difficulties. Normally, the Far East is one of the biggest markets for Pacific coast pulp and paper.

Mr. Pim expects a substantial recovery in sales to the Orient as soon as war clouds have cleared away, but exchange restrictions at present are so severe that even the Japanese and Chinese buyers eager to place orders here are prevented from doing so.

The Australian market for paper products is active at present, reports Mr. Pim, and good business is being done there. New Zealand's recently imposed import restrictions have curbed sales in that territory, and Mr. Pym fears that the kraft sales there this year from B. C. will be only about 25 per cent of last year's quota. Once New Zealand has overcome her present credit difficulties, however, the dominion should be back in the market.

Several South American countries, notably Ecuador, Columbia and Peru are now buying British Columbia made kraft and other papers.

● Foreign competition is intense in several markets where British Columbia paper is now being sold, says the Pacific Mills executive. Particularly in Australia, he says, Czecho-Slovak paper is a serious factor and in the Orient some German shipments are being made.

"World markets these days are a difficult thing to estimate," said Mr. Pim. "Political and economic events happen so swiftly that a long-range estimate is

almost impossible. More and more we should realize in this country that the British markets are the dependable ones, and we shouldn't miss any opportunities to hold and strengthen them."

Expert Fishermen

● Clarence D. Bruner, resident manager of the West Linn mill of the Crown Willamette Paper Company, division of Crown Zellerbach Corporation, last month got in a good tour of fishing, his favorite sport. With a group of friends from Oregon City, he went to East Lake in central Oregon, southeast of Bend. They came out with their limit.

Death Takes

Alexander Thomson

● Alexander Thomson, chairman of the board, The Champion Paper and Fibre Company, Hamilton, Ohio, died at Christ Hospital, Cincinnati, June 27th, following a short illness of pneumonia and heart complications.

Mr. Thomson had been associated with Champion for 42 years, starting as a mill hand at the age of 17, and successively acting as assistant sales manager, sales manager, vice-president, president and chairman of the board.

He was active in many civic and business organizations. He recently completed a term as president of the Ohio Chamber of Commerce and was a member of the United States, Ohio, Cincinnati and Hamilton Chambers. Mr. Thomson was a member of the board of both the National Association of Manufacturers and United States Chamber of Commerce and a director of Cincinnati Federal Reserve Bank. He had membership and a keen interest in many paper and board associations and for years enjoyed a close contact with youth through his work with the Boy Scouts and Young Men's Christian Association.

Pulp Men Address

Chamber of Commerce

● Clarence D. Bruner, resident mill manager for the Crown Willamette Paper Company at West Linn, Wm. D. Welsh of the public relations department of Crown Zellerbach Corporation, and Otto Hartwig, social security advisor of the same company, were speakers at one of the June meetings of the Chamber of Commerce of Oregon City.

Mr. Bruner presented an interesting history of the paper industry from its inception at Oregon City in 1887 by William Pierce Johnson to its present status.

Following him, Mr. Welsh spoke of the difficulties faced by the industry in taxation, government subsidy of competing regions and lack of tariff protection. He also called attention to the contribution of the mills to support of farmers and to local businesses, and to the success of the companies in their relations with the employees through five uncertain years with no strikes.

Mr. Hartwig discussed the relationships between management and employees, pointing out that cooperation was the keynote of successful contact. As an example of cooperation, he cited the safety work which has been done in Northwest paper mills, resulting in a notable reduction in accidents. Such cooperation, he said, brings benefits to all, not losses to one and profits to another.

Round Table Discussion Held in Olympia

● "The job of living together in a plant from day to day cannot be carried out by written agreement or commandment, but it can be aided in large part by conferences such as these where personnel and safety problems are frankly discussed about the council table," declared A. R. Heron, industrial relations director of Crown Zellerbach Corporation and Rayonier Incorporated in opening a four-day conference at Olympia, Washington, June 7, 8, 9 and 10, in which mill managers, personnel and safety supervisors and employe representatives from eight mills took part.

Also seated at the council table were Vice-President John Sherman of the International Brotherhood of Pulp, Sulphite & Papermill Workers, International Representative James Killen of the same group and International Representative Arthur Hannaford of the Papermakers.

Wage and working conditions were not a matter of the conference discussion. These matters are carried in the uniform labor agreement under which the entire Pacific Northwest pulp and paper mill industry operates.

Incidents of every-day operation that "bob up" in plants, such as safety, personnel problems, social security information, the new occupational disease legislation were frankly discussed and valuable suggestions made by employe representatives who had been selected by their local unions.

One of the first speakers of the conference, E. W. Erickson, mill manager of the National Paper Products division at Port Townsend said in part: "An industry is successful when it so conducts its dealings and operations that the sum of all efforts results in advantageous employment to its employes, profit to its owners and entire satisfaction of its products to its customers. An industry that does not fulfill at least all of those obligations cannot be definitely classed as successful." Mr. Erickson stressed the need for long-range planning by the groups involved so that successful operation of plants and maintenance of employment would be sustained.

The gratifying progress of credit unions was a high light of the con-

ference. In a splendid report on the help that credit unions are able to furnish as a convenient method of saving and an economical way of borrowing, Pete Eitrum, Shelton, told the conference that "credit unions are careful to help workers out of financial difficulties rather than lending money for them to get into debt for something they cannot afford." He cited many instances where this medium for borrowing money at reasonable interest and small payments had relieved distress and helped many workers "over rough spots and improved their work by removing worry."

Most of the loans are for small amounts, he said. Four hundred thirty-two of the aggregate of 928 loans covered in the report are for \$50 or less, 319 for \$51 to \$100 and a very few over \$200.

The credit union section met Saturday morning, with most of the regular conference delegates "listening in" and expressing gratification at the helpful way in which credit union officers are conducting the service.

The conference on personnel and safety problems brought out the fact that papermill executives have other problems and responsibilities than "just making paper."

Responsibility to thousands of stockholders and investors who provided the finances for building up plants which represent \$13,000 investment behind every job in the Crown Zellerbach plants, and responsibility to government which collects twenty cents an hour in taxes for every hour worked by each employe of the same group were cited by speakers as added responsibility to that of meeting payrolls.

Vice-President Albert Bankus, San Francisco, declared the pulp and paper industry is one of the greatest Pacific coast purchasers of supplies, saying: "While I have not figures at hand for the coast industry as a whole, an indication of the amounts of supplies purchased can be gained when I tell you that Crown Zellerbach alone spend ten million dollars annually for supplies other than pulpwood and machinery." Mr. Bankus added that the Crown group buys one-twelfth of

the annual production of the largest sulphur concern in Texas, and said that the corporation also buys annually fleece from between 27,000 and 28,000 sheep to make its paper-mill felts.

Vice-President F. N. Youngman, Portland, outlined the immense sales organization required over the nation and elsewhere in order to secure business and keep plants of the Crown Zellerbach group operating. He stressed continued quality of product as being absolutely necessary in maintaining old customers and securing new customers and said construction and equipping of the new research laboratory and technical department building at Camas "is another definite step in Crown Zellerbach plants to find new uses and guard quality through production in order to maintain balanced operation of its plants."

J. W. Hoover, newly appointed director of labor and industries, with his staff, were guests of the group at luncheon on Thursday at the Olympian hotel, and congratulated the Pacific pulp and paper industry and employes on great strides made in safety.

Those attending had an interesting hour in going over to the old capitol building to observe how the unemployment compensation handled claims and turned out the compensation checks mechanically. Jack Bates, unemployment compensation commissioner, and staff members also paid an official call on the conference group.

Employe representatives attending the conferences were selected by local unions.

C. W. Nichols, Sr., Elected President of Nichols Engineering

● Mr. C. W. Nichols, Sr., has been elected president of the Nichols Engineering and Research Corporation, 60 Wall Tower, New York City. Mr. Nichols succeeds Henry J. Hartley who resigned to accept the presidency of the Certain-teed Products Corporation.

The company's products include the Nichols-Herreshoff sewage sludge incinerators, Nichols-Decarie refuse incinerators, Nichols-Herreshoff multiple hearth roasting and calcining furnaces, Nichols-Freeman flash roasters for producing SO₂ from pyrites, and the Nichols-Freeman Vortrap classifiers.

Treasury Department Investigates Wood Pulp Dumping Charges

Representative Martin F. Smith introduces a bill providing for a tariff on wood pulp.

● The investigation now under way by the Treasury Department of the United States wood pulp industry's charges that foreign wood pulp is being dumped in this country to the detriment of the industry and its employees, will require another month or two, according to a letter written June 16th to the Honorable Martin F. Smith, member of congress from the third Washington district, by J. H. Moyle, commissioner of customs.

Following is Mr. Moyle's letter:

TREASURY DEPARTMENT
BUREAU OF CUSTOMS
WASHINGTON, D. C.
June 16, 1939

Hon. Martin F. Smith,
House of Representatives,
Washington, D. C.
My dear Mr. Smith:

The receipt is acknowledged of your letter dated June 7, 1939, referring to this Bureau's letter of March 31, 1939, concerning the investigation into the alleged dumping of wood pulp from foreign countries and inquiring as to the present status of the matter.

Investigations are now under way in Europe for the purpose of ascertaining definitely whether or not wood pulp from any of the European countries has been or is being imported into the United States at so-called dumping prices and, at the same time, the officials of the Treasury Department are engaged upon a study of the possibility of injury to the domestic industry by reason of the importation of foreign wood pulp at low prices. As was pointed out to you in this Bureau's letter of March 31, it is necessary, before a finding of dumping may be issued, to establish that an industry in the United States is being or is likely to be injured, by reason of the importation of foreign merchandise and also that such foreign merchandise has been or is being imported at so-called dumping prices.

Although it is expected that the investigation into the alleged injury to the domestic industry may be concluded within the near future it is not believed that the foreign value investigation will be completed for another month or two. As soon as a decision has been reached in this case the Bureau will immediately notify you in view of your interest in the matter.

Very truly yours,
(Signed) J. H. MOYLE,
Commissioner of Customs.

In transmitting a copy of Commissioner Moyle's letter to PACIFIC PULP & PAPER INDUSTRY, Congressman Smith stated, "The letter from Commissioner Moyle is self explanatory, and my only comment is that I have followed it up with a plea that the investigations

be expedited as rapidly as possible so that the information will be available at the earliest possible time."

On July 12th the Associated Press reported that Senator Lewis B. Schwellenbach of Washington had urged Secretary of the Treasury Henry Morgenthau, Jr., to take immediate steps to stop dumping of foreign wood pulp in the United States. The Associated Press dispatch went on to say that the United Pulp Producers Association filed with the Treasury Department several months ago a complaint that foreign producers were dumping wood pulp into the United States at low prices.

Senator Schwellenbach was quoted as saying that bleached sulphite was being sold at the Atlantic seaboard as low as \$42 per short ton and unbleached sulphite at \$32, which was below the cost of production in the United States. American production, Senator Schwellenbach was quoted as saying, has been curtailed 50 per cent in the past year or so, as three-fourths of the pulp sold in the United States was of foreign origin. (Additional data on the proportion of foreign to domestic wood pulp sold in the United States market will be found on pages 38 and 39 of the May Annual Review Number for 1939.)

Smith Introduces Tariff Bill

● On June 29th, 1939, Congressman Martin F. Smith introduced the following bill in the House of Representatives providing for a tariff of \$10 per short ton on chemical wood pulp. It is H. R. 7034.

"A bill to raise revenue by taxing imported chemical wood pulp.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That section 601 (c) (4) of the Revenue Act of 1932 is amended by inserting before the period at the end of the first sentence thereof the following: "Chemical wood pulp, bleached or unbleached, one-half of 1 per cent per pound gross weight."

On July 6th, Congressman Smith advised this journal that, "My bill, H. R. 7034, has been referred to the House Committee on Ways and Means. Getting action on the measure in the present session of Con-

gress depends upon the length of time before adjournment, and, as you have noted by press dispatches, it is impossible to say just how soon the session will end."

Had Congressman Smith's bill been the law during 1938, the Federal government would have collected \$15,316,490 in duties on the 1,531,649 short tons of chemical wood pulp imported during the past year.

Coast Newsprint Producers Indicted

● On July 12th, the Associated Press carried the following news story from San Francisco:

"A special federal grand jury here today returned an indictment against seven companies and fifteen individuals charging violations of the antitrust laws in connection with the manufacture and distribution of newsprint paper on the Pacific Coast.

"Three Canadian corporations were included in the seven companies named in the indictment. The government charged that they entered into a combination and conspiracy with American manufacturers to fix prices for newsprint paper in the United States.

"The companies indicted were: The Crown Zellerbach Corporation, San Francisco, and its subsidiary, the Zellerbach Paper Company, San Francisco; another Crown Zellerbach subsidiary, the Pacific Mills, Ltd., Vancouver, B. C.; the Powell River Company, Ltd., Vancouver; the Powell River Sales Company, Ltd., Vancouver; the Hawley Pulp and Paper Company, Portland, and the Inland Empire Paper Company, Millwood, Wash.

"J. D. Zellerbach, president of Crown Zellerbach Corporation, issued the following statement:

"We have not as yet had time in which to read or analyze the various charges of the government. Whatever they may be, we are prepared at the proper time and place to fully meet them and we are confident that when our case is presented in the courts our corporations and their officers will be absolved."

"The fifteen officers and employees of the corporations indicted were: Louis Bloch, Isadore Zellerbach, James D. Zellerbach, Harold L. Zellerbach, Archibald B. Martin, Richard A. McDonald, Thomas McLaren, Gerald E. Young, all San Francisco officials of Crown Zellerbach Corporation.

"Others were Harold S. Foley, Sheldon D. Brooks and Robin Bell-Irving, all officers of the Powell River Company, Ltd., in Vancouver; William Barclay, manager of the Powell River Sales Company, Ltd., Vancouver; John H. Smith, Portland, and Arthur D. Hosfeldt, Portland, both of the Hawley Pulp and Paper Company; Chester A. Buckland, Millwood, Wash., general manager, Inland Empire Paper Company."

American Can's Paper Milk Bottle Introduced in California

**Container fabricating plant operating in San Francisco—
Plan second plant for Los Angeles—Employs
bleached kraft board.**

● The American Can Company, Colossus of the tin can industry, has started the manufacture and sale of paper milk bottles, and the leasing of filling machines on the Pacific Coast, thereby expanding the market for paperboard in this region.

With the clarification of the California State law permitting preformed milk containers Canco erected a container fabricating plant at its San Francisco factory that is said to be the last word in sanitary manufacturing.

The new plant, which went into production early in May of this year, is at the top of the big factory building. The rooms where the containers are manufactured are kept spotlessly white, air is conditioned, and all efforts are bent toward getting the highest possible degree of sanitation.

Furthermore, with the thoroughness typical of the company, a new research laboratory is being built which will specialize in milk problems. These laboratories will be on the same floor as the milk container manufacturing plant.

The American Can Company's new container plant is in charge of Joe Collopy, long experienced in packaging problems. Company officials have stated that a container making plant for Los Angeles is

also being planned.

The material used by Canco is pure bleached sulphate paperboard, with the container plug being made of sulphite board. Thicknesses of from .012 to .030 inches are used.

Occupying a space of 44,000 square feet, the present equipment of the plant includes two one quart lines, and one combination line, forming one-half pint and pint containers.

Beside the research laboratory mentioned above, there is a complete physical testing laboratory for testing the physical properties of both the finished container and the paper from which it is made. Thorough tests preclude any defective containers being sent to customers.

From the rolls of paperboard the future containers go through a printing machine, which prints on the blank whatever message the dairyman wishes to present to his patrons. Thus the paper container has the advantage that colorful advertisements can be applied at a very low cost to the dairyman.

In the printing machine a special thermoplastic cement is applied to the surfaces to be joined, the container is printed, and the blank is scored.

The blanks are then stored in closed trucks to dry. In the same room are machines for punching

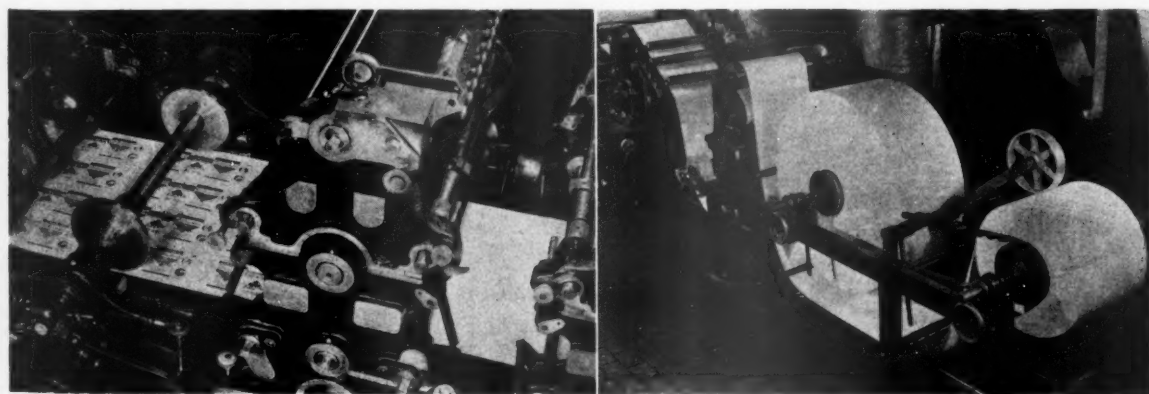
the plug, or cap, of the container and also the bottom.

In another room the containers are formed and paraffined in a special machine largely built of stainless steel. The paper containers are given a 165-degree paraffine bath, remaining in it for 92 seconds.

The formed, paraffined and sealed containers are immediately sealed in air tight paper cartons, as shown in the photograph. A package of 189 empty quart containers weighs only 20 pounds.

To quote from a talk by Dr. F. F. Fitzgerald, Director of Research, American Can Company, before a Food Technology Conference at the Massachusetts Institute of Technology: "Since the largest proportion of the business of the can manufacturers of the United States is a development and sale of individual single-trip containers for the factory packaging of raw food products, and since raw milk represented a possible market for such containers, the American Can Company believed it advisable to investigate the volume and character of milk production and distribution.

"Such an investigation, conducted by the Marketing Division of our company, indicated 12 billion quarts as the yearly current volume of fluid milk consumed in the United States as a whole. Of this total, 8



Rolls of bleached kraft paperboard being fed into the lithographing machine (right) which also trims and cuts the board into blanks for the several sizes of paper milk containers.

billion quarts were sold in urban and suburban centers. The urban market of 8 billion quarts is mainly concentrated in the 96 metropolitan districts of 100,000 or more population, which consume 77 per cent of this amount, leaving 23 per cent to the smaller suburban centers.

"There is little seasonal trend in fluid milk sales. The rapidly increasing proportion of milk sold by stores was especially interesting from the standpoint of the container manufacturing industry.

"We chose a single-trip container, first, because such containers require no deposits at the store and they do not have to be saved by the consumer. On the contrary, they are destroyed by the consumer and the dairy is thereby kept bacteriologically free from contact with the home. Any connection with the home and dairy is a special public health hazard if there are cases of communicable diseases in the home. Second, a single-trip container obviates the recleaning and sterilizing that are necessary with re-used containers.

"We chose a paper container because of its low cost, saving in weight, and its easy destructibility after use, and because the use of a non-transparent container protects the product against deterioration due to sunlight.

"The package was so designed that it could be made with minimum mandrel forming, which usually retards speed of production. A square

design was selected because such packages could be packed solidly in a shipping carton, thus economizing space and offering insulation against rise in temperature during the transportation of filled containers.

"We adopted a particular form of closure in which the closure cap is integral with the top and cannot be entirely removed from the package. This form has various advantages. The cap may be closed under sterile conditions in our factory to prevent contamination of the container from the time it is made in the factory until it is used in the dairy. The cap may be mechanically opened in the dairy and the container resealed after filling. As the cap is integral with the top, it cannot be removed entirely from the package and is always available for reclosing in the home. The container possesses a no-drip feature, i. e., the milk does not run down the sides of the container after the desired quantity of milk has been removed.

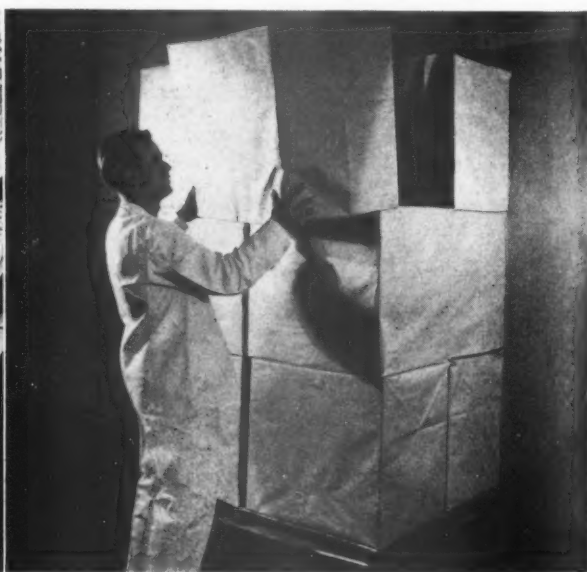
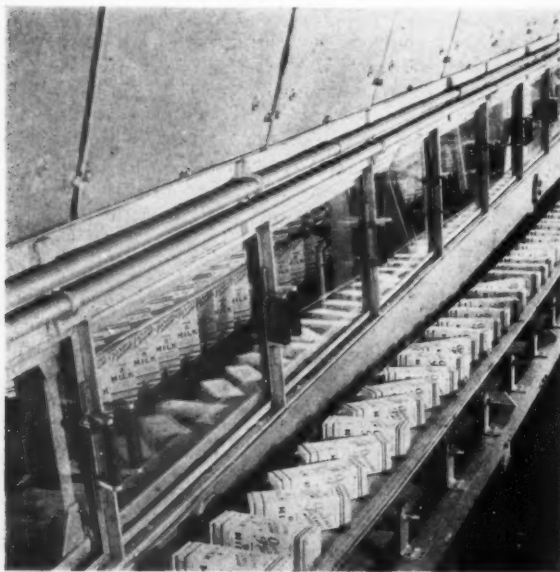
"The character of materials used in the manufacture of these containers, as well as the manufacturing methods, contribute to making them a satisfactory and sanitary container. Only paper made from virgin chemical or mechanical pulp is used, and methods of wrapping and handling such paper stock with the minimum of manual contact were devised to prevent contamination by human touch. The adhesives are thermoplastic cements, the use of which avoids other types of

adhesives which might themselves be a media for bacteria unless preservatives were employed.

"The containers are being formed, are treated with paraffin with the object of making the package stronger and more rigid, improving the appearance, providing waterproofing, providing hermetic seal, and assisting in sterilization. Paraffin treatment was adopted because it attains these objectives; paraffin can be made free from odor and taste and it is inert to bacterial attack.

"The individual paper containers are delivered to the dairies in sealed, dustproof paper cartons. This assures the delivery of clean containers to the dairy and provides protection to containers held in storage before use.

"Paper milk containers are now being supplied to dairies in a practically sterile condition as determined by a rinse test method approved by several laboratories. Eighty per cent of paper milk containers now being used yield no viable bacteria. Of the remaining 20 per cent that do show colonies on plates made with rinse water, over 90 per cent have fewer than five colonies per bottle. These counts are especially significant when it is realized that the Public Health Ordinances and Codes (1935) state that bottles shall be so clean that they shall contribute not more than approximately 1,000 organisms to each quart of milk, or one bacteria or colony per c.c. capacity.



After the containers are formed they pass through a paraffining process which gives them a uniform coating of paraffine at 165 degrees F. On the right, immediately after leaving the paraffining machine the milk containers are packed into dust proof paper cartons for shipment to the dairies.

The American Can Company's paper milk container was introduced in the New York Metropolitan Area in 1935, after five years of research work had gone into its development. In this market today, more than 6,000,000 paper milk containers are being sold per week.

Some weight comparisons are interesting. A standard case of filled quart milk bottles weighs 65 pounds, without ice. A standard case of paper milk containers, also without ice, weighs only 27 pounds.

Another advantage for paper is that it takes less space than glass. A standard milk case takes up 1½ cubic feet of space. A case of paper containers but one-half cubic foot.

At the present time eight California dairies are using Canco paper containers.

Visitors are most welcome to inspect the San Francisco plant if they will make an appointment first.

Powell River Cutting Airplane Spruce

● Powell River Company has found a profitable market outlet for some of its highest grade spruce brought in from the Queen Charlotte Islands for newsprint.

Rather than convert this No. 1 spruce into pulp, Powell River Company puts the logs through its sawmill and cuts timbers to the dimension required by the British government for airplane manufacture. From Powell River it is shipped direct to the United Kingdom.

Although metal has largely replaced spruce in the manufacture of modern aircraft, designers have recently found that there is no satisfactory substitute for spruce in some airplane parts and since the rearmament program got under

way, orders for high grade stock have been issued.

During the Great War the Queen Charlotte Islands contributed many millions of feet of airplane spruce from forests which in recent years have been cut solely for pulpwood. The war-time cutting was supervised by the Imperial Munitions Board.

Henry J. Hartley Elected President of Certain-teed

● Henry J. Hartley was elected president of the Certain-teed Products Corporation of New York City on June 1st.

Certain-teed, which manufactures roofings, insulating papers and allied products, has five plants located strategically throughout the country, including a 38-tons-per-day mill at Richmond, California, on San Francisco Bay.

Mr. Hartley is already well known to executives and operating men of the Pacific Coast pulp and paper industry for, as president of the Nichols Engineering and Research Corporation of New York he spent considerable time in this region during the past several years in the interests of their Vortraps and Herreshoff recovery furnaces.

During the latter part of July Mr. Hartley plans to visit the Certain-teed plant at Richmond and the company's sales offices in the Pacific Coast territory.

Hanny's Return From Hawaii

● J. E. Hanny, resident manager, Camas mill, Crown Zellerbach Corporation, arrived in San Francisco July 5 en route home from a vacation trip to the Hawaiian Islands. He was accompanied by his wife and daughter.

Harris Inspecting Dupont Laboratories

● Dr. Allen Harris, British Columbia scientist, engaged by the provincial government to survey new uses for wood particularly in regard to cellulose products, has been visiting the Dupont laboratories in Wilmington, Del.

Coast Mills Receive Japanese Rayon Pulp Orders

● Late in June the Bureau of Foreign & Domestic Commerce, U. S. Department of Commerce, announced that it had received word from the commercial attache in Tokyo that United States pulp mills making rayon grades would receive orders for 15,000 long tons (16,800 short tons), and Canadian mills 13,000 long tons (14,560 short tons) for shipment to Japan between July 1st and December 31st, 1939.

The report was confirmed early in July and it was also learned that the United States order would go in its entirety to Rayonier Incorporated with operating mills at Shelton, Port Angeles and Hoquiam, Washington; and that the Canadian order was received by the British Columbia Pulp & Paper Company who will produce the 13,000 long tons in its mills at Port Alice and Woodfibre, B. C.

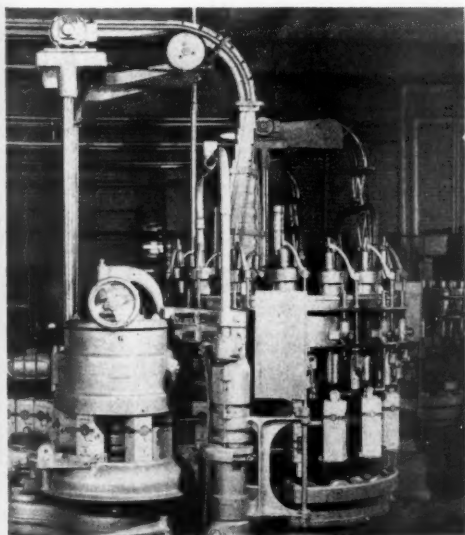
While the Department of Commerce report implied that this was all the rayon grade wood pulp the Japanese would import until 1940, further importations will, of course, depend upon improvement in the Japanese import-export and foreign exchange situations. Should Japan's exports substantially exceed her imports over the next few months providing her with more foreign exchange, she would undoubtedly relieve the strained raw material situation in her rayon and staple fiber industries by importing more pulp of rayon grade.

Barr Joins TAPPI

● Charles M. Barr, partner in Cavin, Marshall & Barr, consulting engineers with offices in the Exchange Building, Seattle, has become an active member of national TAPPI.

Frampton Vacations In Northwest

● Charles G. Frampton spent his vacation during June in the Northwest visiting his son in Portland.



On the left the Canco filling machine operating in a dairy. The machine opens the sealed plug, fills the container with milk or cream and hermetically reseals it again. On the right, demonstrating how easy it is to pour from the Canco milk container and to reclose it tightly.

Pacific Coast Box Makers Hold Twenty-Fifth Convention

THE Silver Anniversary for any organization is a noteworthy milestone, and the Twenty-fifth Annual Convention of the Pacific Coast Paper Box Manufacturer's Association, held at Del Monte, June 26-28 was no exception. All those present agreed that it was a splendid success.

For many years the business meetings have been held in the Copper Cup Room, Hotel Del Monte, but Convention Chairman, Howard A. Campbell, Fibreboard Products Inc., San Francisco, had the idea that the setting for the business sessions of the Silver Anniversary of the association deserved a more ornate and dignified background. He selected nothing less than the Council chamber of the board of directors of the historic hotel — the Tower Room.

As usual the convention program was made up of association meetings, golf, a cocktail party, a "pari-mutuel" on the golf players, ladies' putting contest and bridge, and capping the program, the convention banquet and entertainment.

At the end of the meeting, President William J. O'Donnell, Fleishacker Paper Box Co., San Francisco, turned the gavel over to T. B. Seebaldt, Hersee Co., San Francisco, for the 1939-1940 term.

A. L. Baker, book editor of one of the largest publishing houses in California, the Pacific Press Publishing Association, at Mountain View, delivered an inspiring address Tuesday morning on the subject: "Keep America Out of War." He spoke for 45 minutes on a subject in which every citizen in the United States is vitally interested. His impassioned eloquence won for him a hearty tribute of praise from President O'Donnell and the entire assembly.

A. E. Murphy, Chicago, business manager, Folding Paper Box Association of America; and Charles K. Shaw, Shaw Paper Box Co., Pawtucket, R. I., and president, National Paper Box Manufacturer's Association, both presented the national picture for their respective organizations in a convincing way.

Charles Ruble, Los Angeles, Standard Paper Box Co., in his own inimitable manner just reminisced. Sidney L. Wellhouse, National Paper Co., Atlanta, Ga., and a member of the executive committee of the National Association spoke on the value of association work with some authority. He belongs to no less than 10 national associations.

The old guide, philosopher and friend, Joe Meyerstein, attorney for the Pacific Coast Association for

many years, told the boys what they should and should not do.

● Tuesday, June 27, was the big night. The annual banquet was staged in the Auditorium, and to the singing of that lilting refrain: "Happy Birthday to You," President W. J. O'Donnell cut a gigantic birthday cake which had been especially prepared for the occasion.

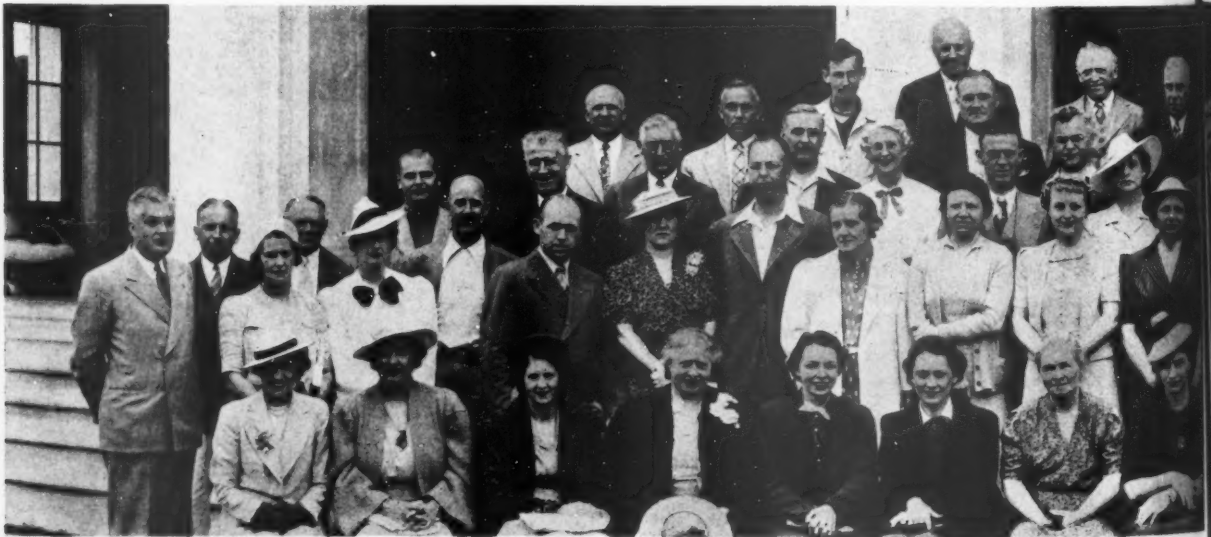
The room was decorated in an "Old Time Country Fair" motif, with canvasses on the wall portraying Siamese twins, the bearded woman, and all the other attractions of such an event.

The ladies were adorned with sun bonnets and aprons to match, and the gentlemen wore jeans or dark pants with a colorful shirt, scarf, and a hat designed to keep out the blistering rays of the sun.

About the only one not in costume was the official barker of the show, W. H. Thomas, Fibreboard Products Inc., San Francisco. Chairman of the evening was Fred C. Kewell, Western Paper Box Co., Oakland.

● In addition to President Seebaldt, the association chose the following officers:

Joe O'Reilly, Standard Paper Box Co., Tacoma, Wash., vice-president; Clifford D. Allen, Western Paper



In this picture appear a large proportion of the members of the PACIFIC COAST PAPER BOX MANUFACTURERS' Association at Del Monte, California, June 26-28, 1939.

Box Co., Oakland, treasurer; Payson Thompson, Portland Paper Box 10-6375 PULP July 7 NOVAK Co., Portland; Howard A. Campbell, Fibreboard Products Inc., San Francisco; and Frank C. O'Leary, Eureka Paper Box Co., Los Angeles, executive committee, Folding Box Division; L. D. Hincer, Hincer-Standard Paper Box Co., Seattle; S. H. Woods, Napa Paper Box Co., Napa; and W. H. Howell, Los Angeles Paper Box Co., Los Angeles, executive committee, Set-Up Division.

Worth Wins Golf Trophy

● The men's golf tournament was, as usual, a big success. There were 23 competitors. H. H. Worth, secretary, Los Angeles Association, won the silver cup, which makes him the undisputed champion for the current year.

There were three flights in all. J. Lloyd O'Connell won the first flight, and was the actual winner of the tournament, but could not take the Silver Challenge Cup because he was not a member of the association.

The scores follow:

First Flight

J. L. O'Connell	219
Walter Schulken	223
J. S. Sweet	223
W. C. Mattes	224

Second Flight

H. A. Campbell	222
S. Platt	223
R. Schmidt	226
C. D. Allen	231

Third Flight

H. H. Worth	220
L. A. Thiebaut	226
Payson Thompson	233
J. E. Cox	243

● Winners of the blind bogey were: A. E. Murphy, C. D. Allen, and W. W. Huelat.

Low net scores for 18 holes were posted daily and awards went to the flight winners: June 26—R. E. Kimball, 69; J. E. Sweet, 66; G. Trost, 73. June 27—Ray Thiebaut, 68, J. F. Nields, 75; Richard Schmidt, 77. June 28—R. E. Mullen, 74, Payson Thompson, 74; C. Johnson, 76.

● Mrs. Clifford Mattes made the 9 holes in the ladies' putting contest in one below par, 17, and won first prize. Mrs. Sam Platt came in second with a score of 18. Miss Virginia Schmidt came in third with a score of 19. The consolation prize went to Miss Harris.

Following the morning putting contest the ladies played bridge. There was a prize for each table and the following ladies won: Mrs. C. D. Allen, Mrs. R. O. Comstock, Mrs. Robert E. Kimball, Mrs. H. B. Senior, and Mrs. C. H. Johnson.

Another interesting event for the ladies was Hop Ching, or Chinese checkers. Mrs. Hugh Peat was the winner in this.

The following registered:

L. M. Simpson, Pioneer-Flintkote Co., Los Angeles; Joseph Reilly, Standard Carton Co., Tacoma, Wash.; R. E. Kimball, Stevenson, Jordan & Harrison, San Francisco; Richard Schmidt, Schmidt Litho-

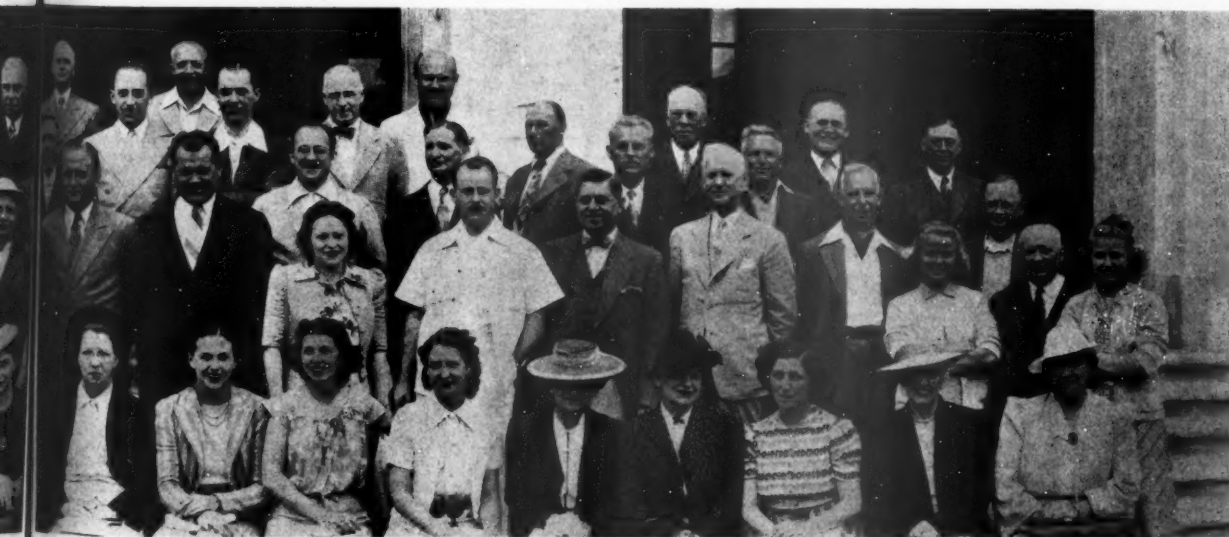
graph Co., San Francisco; J. E. Cox, Carton Institute, San Francisco; W. Waxman; D. F. Barthelme, National Adhesives Corp., San Francisco.

Harry Brintnall, H. W. Brintnall Co., San Francisco; Sidney Wellhouse; M. H. Liebman; H. B. Senior, National Paper Box, Ltd., Vancouver, B. C.; A. E. Murphy, Folding Paper Box Association of America, Chicago; H. A. Campbell; W. H. Thomas, Fibreboard Products Inc., San Francisco; Payson Thompson, Portland Paper Box Co., Portland; Fred C. Kewell, Western Paper Box Co., Oakland.

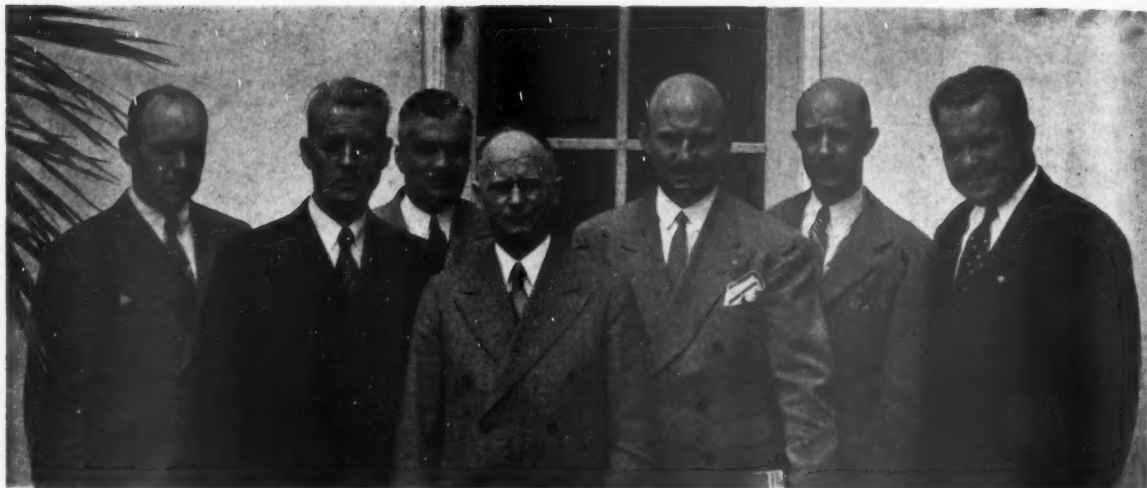
Cliff Allen, Western Paper Box Co., Oakland; W. H. Kewell, Los Angeles Paper Box Factory, Los Angeles; F. W. Kewell, Western Paper Box Co., Oakland; W. J. O'Donnell, Fleishhacker Paper Box Co., San Francisco; A. E. Carlson, Pioneer-Flintkote Co., Los Angeles; J. E. Nields, Nashua Gummed Paper Co., San Francisco; C. H. Johnson, C. Mattos, California Ink Co., San Francisco; G. A. Trost, Fleishhacker Paper Box Co., San Francisco.

H. H. Worth, Paper Box Institute, Los Angeles; S. C. Caldwell; Charles Ruble, Standard Paper Box Co., Los Angeles; C. K. Shaw; T. B. Seebaldt, Hersee Co., Los Angeles; Oscar Bergland, Union Paper Box Co., Seattle, Wash.; R. O. Comstock; C. J. Schmitt Co., San Francisco; Sam Platt, United Paper Box Co., San Francisco.

George Welp, International Printing Ink Corp., New York; David Elliott, International Print-



MANUFACTURERS ASSOCIATION and their families attending the TWENTY-FIFTH ANNUAL CONVENTION of



NEW OFFICERS were elected at the box maker's meeting. Left to right, **JOE O'REILLY**, Standard Carton Co., Tacoma, Vice-President; **T. B. SEEBALDT**, Hersee Co., Los Angeles, President; **PAYSON THOMPSON**, Portland Paper Box Co., Member Executive Committee, Folding Box Division; **HUGH PEAT**, Executive Secretary (reelected); **CLIFFORD D. ALLEN**, Western Paper Box Co., Oakland, Treasurer; **HOWARD A. CAMPBELL**, Fibreboard Products, Inc., San Francisco, Member Executive Committee, Folding Box Division; and **W. K. KEWELL**, Los Angeles Paper Box Co., Member Executive Committee, Set-Up Box Division.

ing Ink Corp., San Francisco; Hugh Peat, Pacific Paper Box Manufacturers Association, San Francisco; Roy Cole; Walter W. Huelat, Blake, Moffitt & Towne, Los Angeles; W. H. Schulken, Independent Paper Stock Co., San Francisco; H. H. Zellerbach, Zellerbach Paper Co., San Francisco; J. T. McLean; L. A. Thiebaut, Raisin & Thiebaut, San Francisco.

Van Amberg; J. L. O'Connell, Blake, Moffitt & Towne, San Francisco; J. C. Meyerstein, San Francisco; Chas. A. Kaas, Hampden Glazed Paper & Card Co., San Francisco; W. J. Egan; Jay Hamerslag, Hamerslag Paper Products Co., San Francisco; Ross Himes; J. A. Sweet, Pacific Straw Paper & Board Co., San Francisco; Frank Wright; Roy E. Mullins, Independent Paper Box Co., Los Angeles.

Service Pins Presented to Camas Employees

● At a dinner at Crown Willamette in Camas, Washington, on June 19, 15 long-time employees of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, were presented with new service pins by Albert Bankus, vice president of the corporation, who himself has 30 years of service to his credit.

In the absence of resident mill manager J. E. Hannay, George Charters, assistant mill manager, presided at the meeting. Pins were presented to: Ed Tidland, 30 years; R. H. Russell, 35 years; Ernest Wendt, 40 years; Lexie Smith, 40 years; Ward Young, E. E. Schimel, Gene Allen, O. T. Defieux, Ray West, H. L. Smith, Peter James, Martin Devlin, Burr Crippen, Roy Trutten, and Art Newcomb, all of whom received 20-year pins.

Otto Hartwig, social security advisor of the company, spoke to the group on "Life Begins After 40," emphasizing the value of experienced and mature employees to the corporation. Crown Zellerbach, he said, employs a much larger percentage of men over 40 than the national average.

During the dinner the Camas first aid team was presented with a memento of their winning first place in the first aid contest of the Northwest, held at Shelton last month. The team was presented with an inscribed plaque, and each member received a picture of the group.

Weyerhaeuser Adds More Chromium Plated Screen Plates at Everett

● The Everett mill of the Weyerhaeuser Timber Company, Pulp Division, recently completed the installation of 454 new plates in the screen department for handling unbleached sulphite pulp. These plates are duplicates of the ones originally specified for the mill at the time of its construction. It is of interest to note that even after a long period of operation, the original design and specifications have been found to fit present operating conditions.

In their work toward precise control of pulp quality, screening has been the subject of careful and extensive investigation by the Weyerhaeuser organization. One of the important points in the control of quality and uniformity, and in assuring freedom from dirt and oversize particles, has been that of maintaining precision of slot sizes in the screen plates. Chromium plating has been found to materially assist in maintaining this precision through the life of the plate, without interfering with screening capacity.

The new plates replace some of the 672 which were in the original installation, all of the same type. They are special 1/4-inch chromium-plated bronze plates manufactured by William A. Hardy & Sons Co., and CRODON-plated by the Chromium Corporation of America. They are operated on IMPCO flat screens with Dunbar drives.

Pomona Mill Using Two Mordens

● California Fruit Wrapping Mills at Pomona reports the two new Morden refiners installed on their paper machines in October, 1938, and March, 1939, respectively are performing well and enabling them to produce improved papers.

George S. Witham Dies in Hudson Falls

● George S. Witham, one of the well known old timers of the paper industry and father of George S. Witham, Jr., assistant manager of the Inland Empire Paper Company at Millwood, Washington, died at his home in Hudson Falls, New York, on June 7th.

Mr. Witham retired eight years ago from his position as manager of mills and as a director of the Union Bag and Paper Corporation.

Self-educated, Mr. Witham wrote several books on paper making and prepared the International Correspondence School's course on paper making. He took out more than one hundred patents on pulp and paper making equipment and was active in civic affairs in Hudson Falls, being president of the village corporation for seven years.

Brenzel Buys New Home

● G. S. Brenzel, resident manager of the Union Bag & Paper Corporation at Los Angeles, moved into a fine new home in Downey early in July. His home is located in an orange grove.

General Electric Has 210,000 Stockholders

The number of stockholders of the General Electric Company on June 23, record date for the July 25 dividend, was 209,980, Gerard Swope, president, announced on June 28th. This is an increase of 1,041 over the number of stockholders on March 17, 1939, the last record date, and compares with 209,028 stockholders a year ago.

Control Equipment Co. Installing Brown Instruments

● The possibilities of completely automatic control of various processes in the manufacture of pulp and paper are being increasingly appreciated, and control equipment is being adapted to new uses in many mills. This is especially true in the research laboratories, where new methods are investigated under careful control and with complete records of the various stages.

One such installation of interest is that in the new pulp and paper laboratory of the New York State College of Forestry. Here a control system recently developed by the Brown Instrument Company is in use, giving complete automatic control of pulp cooking.

Steam admitted to the heat exchanger is controlled by a time-cycle temperature controller, and a time-cycle pressure controller is connected to the automatic relief valve. Temperature and pressure curves may be cut on cams so that they may be kept permanently, and cooks duplicated at any time. In addition, a multiple recording Brown potentiometer

Once set, the instruments will keep the cook "on the line" on all subsequent cooks. This method is most suited for the sulphite method. Automatic top relief is of course a necessity for this type of control.

For the soda and sulphate process, a more simple pressure system with time cycle makes a satisfactory installation. Other uses which lend themselves to such automatic control are white and black liquor transfer, automatic combustion control, consistency regulation, tank liquid level control, temperature control for sulphur burners, etc.

The particular automatic control system mentioned, made by the Brown Instrument Company of Philadelphia, is handled in the Northwest by the Control Equipment Company of Portland and Seattle. This company has specialized in scientific instruments and control problems for the past 19 years, and the staff now devotes its entire time to the instruments of the Minneapolis-Honeywell Regulator Company of which the Brown Instrument Company is a division. Complete stocks are carried locally, and a full field and laboratory repair service is available.

B. W. Farnes, vice president, heads all of the Pacific Northwest activities with headquarters at Portland, and R. W. Martig is sales engineer here. R. E. Le Riche is in charge of the Seattle office. C. E. Heinkel handles sales and Charles Meisner takes care of the service work.



**B. W. FARNES, Vice-President
Control Equipment Co.**

records temperature at six different points in the system, before and after the heat exchanger, top of digester, etc. The amount and rate of steam consumption is recorded by a steam flow meter.

Several mills on the Pacific Coast have already installed Brown Instrument Company systems of this type for a variety of purposes, such as controlling the flow of black kraft liquor to the evaporators, for paper machine drier control, oil flow to lime kilns, for controlling dilute black kraft liquor flow, etc.

For the control of a digester cooking cycle, a recording controlling thermometer equipped with a time cycle disc will automatically reset the control index of a recording steam flow controller on the steam line to the digester. Both instruments have automatic reset and adjustable throttling range, and independently adjustable high and low limits on the flow controller make a total of six adjustments, all of which can be simply made while the system is in operation.

Fred Shaneman Elected Vice-President of Penn Salt

● On June 23rd Mr. Leonard T. Beale, president of the Pennsylvania Salt Manufacturing Company and of its subsidiary, the Pennsylvania Salt Manufacturing Company of Washington, announced that Fred C. Shaneman, manager of the subsidiary since 1934, had been elected vice-president.

As vice-president and manager Mr. Shaneman is in charge of the company's chlorine and caustic soda plant in Tacoma and the sales of its products throughout the Pacific Coast area.



**ROBERT W. MARTIG,
Brown Sales Engineer**

Japan to Want Coast Raw Materials

● Japan will insist on raw materials rather than manufactured goods from the Pacific Northwest when she attempts to straighten out her economic situation after the Sino-Japanese war, according to H. R. MacMillan, head of H. R. MacMillan Lumber Export Company, and one of British Columbia's outstanding exporters.

"The Japanese will want pulp rather than newsprint and they will demand more logs instead of lumber," said Mr. MacMillan on his return from a world tour during which he spent more than a month in Japan and China.

"Japan is definitely committed to a policy that may make her industrially dominant in the Orient. To keep her factories going she will have to import tremendous quantities of raw materials; she will try to keep purchases of manufactured goods at a minimum.

Weyerhaeuser at Longview Personal News

● W. Norman Kelly, manager, Longview mill Pulp Division of the Weyerhaeuser Timber Company, became the father of another baby girl on July 6. The young lady was born at the Emanuel Hospital in Portland. This is the fourth addition to the Kelly family, making a combination of three girls and one boy.

Mr. Kelly recently brought his sail boat back from Puget Sound, and is outfitting for the summer sailing on the Columbia.

H. R. "Bob" Heuer, who was seriously ill during the past few weeks, is back on the job after spending some time at the Portland clinic. He pulled out of it in good shape and is now looking fine.

George H. McGregor, superintendent, made a trip to Cloquet, Minnesota, early in July, visiting his home town, and returned to the mill about the middle of the month.

Ray Astle, assistant office manager, was married on June 16 to Virginia Reed of Portland. The couple are now living at their residence in Longview. The mill staff held a stag party for him on June 15 to usher him into married life.

The staff also held an office party in June for Vern Mauerman of the engineering department who was married late in May.

R. B. Wolf, general manager of the pulp division, and Ray Hatch, research director, have been in the East on a business trip together, and were scheduled to return to Longview about the middle of July.

O. C. Schoenwerk, pulp and paper mill consulting engineer of Chicago, visited the Longview mill and also the Everett mill late in June.

We understand that Ed Wood of the technical control department, who recently bought a farm across the river, is now drilling a well with dynamite, having run into a pit of hardpan, with the help of Herb T. Peterson, who bought adjoining property.

The office girls gave a picnic June 21 for all of the men in the pulp mill at Jim Cain's place at the mouth of the Kalamia River. R. B. Wolf was the "Lou Gehrig" of the outfit, being first baseman and star batter.

Camas Wins Inter-Mill First Aid Contest Rayonier at Port Angeles Takes Second

● The Camas first aid team, representing the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation mill at Camas, Washington, walked off with first honors in the inter-mill first aid contest held in the Shelton, Washington, high school gymnasium the evening of June 9th.

When Crown Zellerbach Vice-President Albert Bankus awarded the plaque to the Camas team as winners of first place and congratulated J. H. Rickard, team captain upon his team's very fine showing, Rickard replied by saying, "Mr. Bankus, I ought to be interested in safety work because I remember when you were manager at Camas, you came along one day and caught me up on a railing and told me to get down from there or I would get hurt."

Teams from eight Pacific Northwest mills took part, more than have participated in the previous first aid contests. The event was closely watched by a large crowd of Shelton people and out-of-town visitors.

The Camas team worked out the three problems given to the contestants so perfectly that their score was 98.6 per cent. Close on their heels was the team from Rayonier Incorporated, Port Angeles Division, with a score of 98 per cent. They were awarded the second place plaque.

Tying for third place with 97.4 per cent out of a possible 100 per cent were the teams from Rayonier Incorporated at Hoquiam and from Rayonier Incorporated at Shelton. In fourth place was the team from the Washington Pulp & Paper Corporation, Division of Crown Zellerbach Corporation at Port Angeles, with a score of 97.2 per cent. This team had won the last three contests, which incidentally did not include teams from as many mills.

The team from Fibreboard Products, Incorporated, Port Angeles, took fifth place with 95.8 per cent, followed by the National Paper Product Division Crown Zellerbach Corporation at Port Townsend with 94.8 per cent. In last place was the team from the West Linn, Oregon, mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation with a score of 86 per cent.

These first aid contests are governed by very strict rules. No "cramming" is permitted in advance and the teams never know what the three problems of the contest are until they open the sealed envelopes. Since the teams have no advance idea of what they are to do they study the entire field of first aid and practice various problems for months ahead of the contest. The first aid work has developed such keen interest in safety that it is now four times safer to work in a Pacific Coast pulp or paper mill than it was ten years ago.

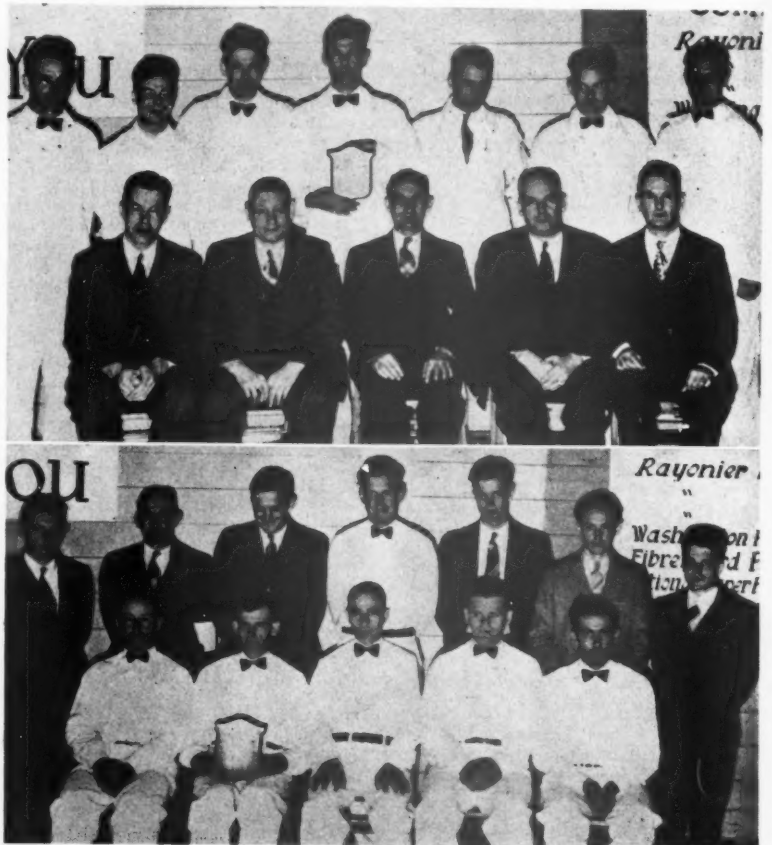
Each team consists of six men including the patient. All eight teams lined up the evening of June 9th on the floor of the gymnasium, standing at attention. The teams' captains were handed the first problem in sealed envelopes. A whistle is blown, each captain opens his envelope and the team gathers around to study the problem. The reading time

allowed depends upon the problem. It may be three minutes or more. When the time is up the whistle blows again and the teams begin work.

The teams each bring a judge and a representative with them. The judges rotate after each problem but cannot judge their own team. The judges cannot talk to the team members nor can the latter talk to the judge. During the working out of a problem no talking is permitted between the team representative and the team. If the judge sees

something being done wrong he can call it to the attention of the team representative as he marks it down on his score sheet. Should the team representative disagree he can protest and argue with the judge and if not finally satisfied he can protest to the referee.

Upon the completion of the problem the judges turn in their score cards to the recorder who calculates the discounts on each problem and later determines the relative standings of the teams after the three problems have been completed.



THE WINNERS

In the top picture are the members of the winning team in the Inter-Mill First Aid Contest, representing the Camas, Washington, mill of the CROWN WILLAMETTE PAPER CO., Division of CROWN ZELLERBACH CORPORATION. First row, left to right, J. M. Miller, Judge; V. C. Gault, personnel supervisor; Fred Pontin, First Aid Instructor for the Washington State Department of Labor and Industry; J. F. Robertson, safety supervisor; and J. D. Holmes, alternate. Second row, Bemas Hutchinson, Hugh Mason, E. W. White, J. H. Rickard, team captain (holding the first place plaque); J. A. Quilici, team representative; L. W. Baillie, and Fred Weakley.

In the Lower picture are the members of the second place team, representing RAYONIER INCORPORATED, PORT ANGELES DIVISION. First row, left to right, Elmer Galloway, F. M. Beal, captain; Earl Henry (holding the second-place plaque); Riley Nelson, and Ernie Virginia. Second row, E. A. Florence, judge, Fred Pontin, state first aid instructor; S. W. Grimes, personnel and safety supervisor; Harold Orem, Paul Lusk, alternate; J. C. Frey and Kermit Fisher.

For the contest at Shelton Fred Pontin, first aid instructor of the Washington State Department of Labor & Industry, served as referee. H. H. Sanderson of the Sanderson Safety Supply Co., Seattle, acted as timekeeper; Wallace C. Crait of Rayonier Incorporated served as recorder, and R. H. Williams, personnel and safety supervisor, Rayonier Incorporated, Shelton Division, acted as announcer.

Prior to the contest at Shelton the companies held a dinner at the Shelton Hotel for the teams and a number of guests, nearly two hundred in all.

George Cropper, resident manager of Rayonier Incorporated, Shelton Division, welcomed the visiting teams and the guests to Shelton. He turned the meeting over to R. H. Williams, personnel and safety supervisor of Rayonier at Shelton, who introduced the team captains and the guests.

The guests included, Jay Ollinger, supervisor of industrial insurance, Washington State Department of Labor and Industry; Ed Sorger, supervisor of safety; Paul O'Brien, comptroller; William Gregor, investigator; and Fred Pontin, first aid instructor who gave a short talk.

Also introduced by Mr. Williams were: Martin L. Mammen, general safety supervisor for the Crown Zellerbach Corporation and Rayonier Incorporated; Grant and Eber Angle of the Mason County Journal; H. H. Sanderson of the Sanderson Safety Supply Co. of Seattle; John Sherman, vice-president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers; A. R. Heron, director of industrial relations for Crown Zellerbach Corporation and Rayonier Incorporated; Albert Bankus, vice-president of Crown Zellerbach Corporation; A. W. Berggren, resident manager, Rayonier Incorporated, Port Angeles Division; Morton B. Houston, executive offices of Rayonier Incorporated, Seattle; William D. Welsh, executive offices of Crown Zellerbach Corporation, San Francisco; Otto Hartwig, adviser and consultant on social security problems to Crown Zellerbach Corporation, Rayonier Incorporated and Fibreboard Products, Incorporated; Lawrence K. Smith and Harlan Scott of Pacific Pulp & Paper Industry, Seattle; William T. Webster, general superintendent, St. Regis Kraft Company, Tacoma; J. M. Tedford, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington; Ralph Lawrence, personnel and safety supervisor, Fibreboard Products, Incorporated, Port Angeles; and F. R. Pearson, office manager, Rayonier Incorporated, Shelton Division.

Arrangements for the dinner and the first aid contest were made by Mr. Cropper, Mr. Williams and Mr. Mammen.

Team Members

● The full list of contestants and their accompanying representatives and judges is as follows:

Rayonier Inc., Shelton, Washington—L. O. Seljestad (Captain), George Cooper, Jr., Marvin Percy, Wendell Young, J. C. Roush and Walter Spinnarney. Team Alternate, John Cole. Team Representative, Robert Bampton. Team Judge, R. C. Little. Plant Personnel and Safety Supervisor, R. H. Williams.

Rayonier Inc., Hoquiam, Washington—George Burkinshaw, C. L. Lovelace, A. W. Niva, Orrin Schumacher, J. C. Sherman and

Vernon Vogt. Team Representative, F. A. Cardinal. Team Judge, Nick Yakovich. Plant Personnel and Safety Supervisor, J. W. Bagwill. Plant Assistant Personnel and Safety Supervisor, W. C. Phillips.

Rayonier Inc., Port Angeles, Washington—F. Beal (Captain), E. Henry, R. Nelson, H. Orem and E. Virginia. Team Alternate, P. Lusk. Team Representative, K. Fisher. Team Judge, E. Florence. Plant Personnel and Safety Supervisor, S. W. Grimes.

Crown Willamette Paper Co., West Linn, Oregon—Ernest L. Leek, Cecil Mollert, W. S. Grant, Claud Harris, John J. Schneider, Fred Bunnell and Joe Nixon. Team Representative, Fred Bunnell. Team Judge, Con O'Connell. Plant Personnel and Safety Supervisor, J. A. Ream.

Crown Willamette Paper Co., Camas, Washington—H. Rickard, L. W. Baile, Demos Hutchison, Fred Weakley, E. W. White, J. B. Holmes and H. A. Mason. Team Representative, Gene Quillici. Team Judge, J. M. Miller. Plant Personnel Supervisor, V. C. Gault. Plant Safety Supervisor, J. F. Robertson.

Washington Pulp & Paper Corporation, Port Angeles, Washington—J. E. Monar (Captain), E. R. Fleener, E. M. Baker, G. W. Hansen, W. C. Adams and J. V. Venable. Team Alternate, E. C. McCormick. Team Representative, H. C. Iler. Team Judge, C. A. Edmiston. Personnel and Safety Supervisor, E. P. Read.

National Paper Products Company, Port Townsend, Washington—H. R. Knott (Captain), C. Kneeland, L. Harnoy, L. G. Barrett, B. Redding, J. Dooley and B. Tuttle. Team Representative, H. Davies. Team Judge, E. C. Moar. Plant Personnel and Safety Supervisor, F. L. Ziel, Plant Assistant Personnel and Safety Supervisor, D. S. Coney.

Fibreboard Products Inc., Port Angeles, Washington—Alfred J. Goerg (Captain), Clarence O. Johnson, Austin Wyman, Paul T. Hopf, Jr., Herbert S. Boyd and Irving Hanson. Team Alternate, Norman Lloyd. Team Representative, George L. Knorr. Team Judge, Louis J. Howser. Plant Safety Supervisor, R. A. Lawrence.

● The practical side to the first aid contest work was recently emphasized by an automobile accident on the Hood Canal highway. Thomas Seljestad, night boss machine tender, Rayonier Incorporated, Shelton Division, and a former member of the first aid team, came upon an accident while driving near Union. He found that one of the passengers in the wrecked car had a severed artery. Mr. Seljestad went to work at once and skillfully tied the artery so that the injured person was brought safety to the hospital in Shelton for treatment.

Construction Under Way On Derwent Valley Mill

● Percy Sandwell, formerly of Vancouver, B. C., who has the job of building the new newsprint mill in the Derwent Valley, Tasmania, for a group of Australian publishers, has called for tenders on several major contracts in connection with the main project.

Mr. Sandwell, who installed two of Powell River Company's machines and also was engaged for some time as consulting engineer by B. C. Pulp & Paper Company and other Northwest mills, has asked for tenders on the following:

Mill buildings of reinforced concrete with steel framed roofs, of an aggregate cubic content of 2,300,000 cubic feet.

Office buildings of brick on concrete foundations, with structural steel-framed roof, of an approximate total cubic content of 180,000 cubic feet.

Steel-framed timber encased warehouse, approximately 280 feet by 72 feet by 19 feet high.

A water filtration plant with concrete settling basin, 62 ft. diameter by 20 ft. high, and a concrete clear water storage 62 ft. diameter by 20 ft. high.

This latest step follows the recent announcement that two major contracts had been signed—one for the purchase of the main paper-making machine, from Walmsleys (Bury), Ltd., of England; the other, the second largest electric power contract ever negotiated in Australia, with the Hydro-Electric Commission, for 11,500 horse-power a year for 20 years, with right to increase up to 25,000 horse-power.

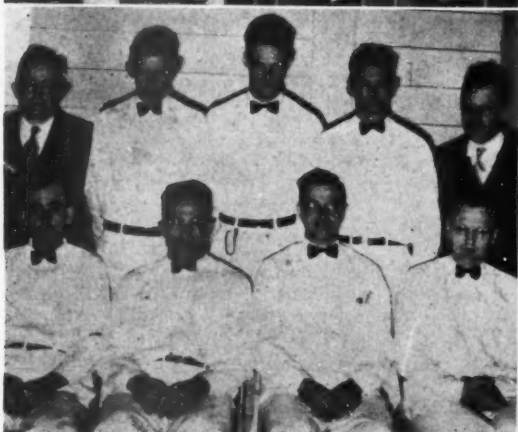
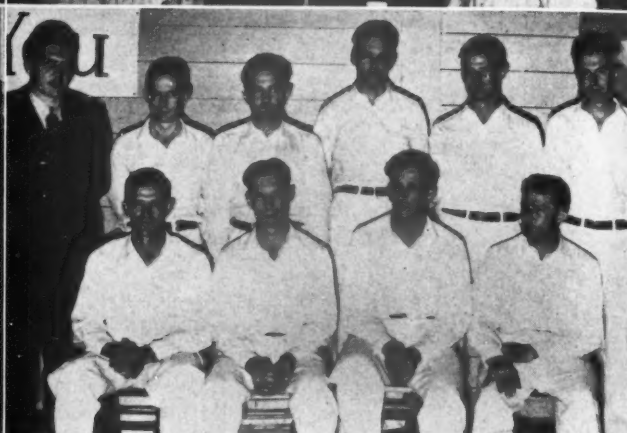
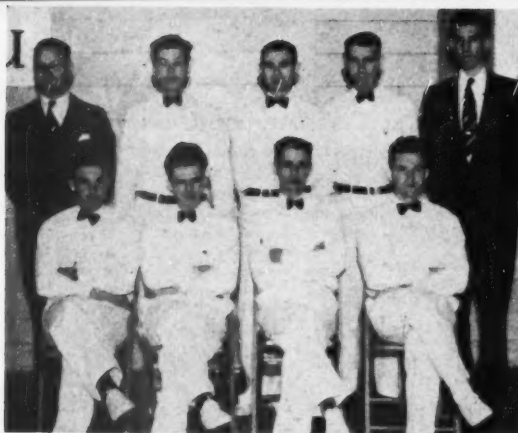
Production of newsprint is expected to begin within 18 month. Of £550,000 being spent on plant, more than half will be spent in Australia.

In the first stage of the industry, production is to be 27,000 tons of newsprint a year; and direct employment will be given to 266 men, apart from the many hundreds who will be employed by the Hydro Commission in enlarging their capacity, and the employment given in the construction of plant and equipment.

Ultimately, production will be increased to 100,000 tons of newsprint a year, directly employing 850 men.



FAST ACTION in applying first aid. This problem called for artificial respiration as the patient was unconscious from electric shock. The WASHINGTON PULP & PAPER CORPORATION, Division of CROWN ZELLERBACH CORPORATION, first aid team loses no time in taking care of the patient until the doctor comes.



COMPETING TEAMS IN THE INTER-MILL FIRST AID MEET

At the top left, **RAYONIER INCORPORATED, SHELTON DIVISION**, first row, Marvin Pearcey, L. O. Seljestad, captain; Walter Stinbarney and George Cooper. Second row, R. H. Williams, personnel and safety supervisor; Wendell Young, W. J. Roush, Jr., R. C. Little and Robert Dampton, team representative.

At the top right, **WASHINGTON PULP & PAPER CORPORATION, Division of CROWN ZELLERBACH CORPORATION**, first row, George Hanson, Cy Edmisten, Harry Iler, team representative; and John Monser. Second row, Jack Venables, W. Adams, Clair McCormick, Everett Fleener, Earl Baker, and E. T. Read, personnel and safety supervisor.

Middle row, on the left, **RAYONIER INCORPORATED, HOQUIAM DIVISION**, first row, D. L. Lovelace, A. Niba, O. Schumacher, and George Burkinshaw. Second row, W. C. Phillips, Forrest Cardinal, team representative; Vernon Vogt, captain; Jim Sherman, Nick Yakovich, and John W. Bagwill, personnel and safety supervisor.

Middle row, on the right, **FIBREBOARD PRODUCTS, Incorporated, Port Angeles**, first row, George L. Knorr, Austin Wyman, Alfred J. Goerg and Clarence Johnson. Second row, R. A. Lawrence, personnel and safety supervisor; Ted Hopf, N. A. Lloyd, Irving Hansen, Louis Howser, Herbert Boyd.

Bottom row, on the left, **CROWN WILLAMETTE PAPER CO., Division of CROWN ZELLERBACH CORPORATION, WEST LINN, OREGON**, first row, W. S. Grant, captain; J. J. Schneider, F. J. Bunnell, C. E. Harris. Second row, J. A. Ream, personnel and safety supervisor; C. J. Mollert, W. H. Coope, E. L. Leek, Con O'Connell, judge.

Bottom row, on the right, **NATIONAL PAPER PRODUCTS CO., Division of CROWN ZELLERBACH CORPORATION, PORT TOWNSEND**, first row, Bert Puttle, Harley Knott, captain; John Dooley, and L. G. Barrett. Second row, Ed Moore, judge, Steve Coney, personnel and safety supervisor; Larry Harney, Carl Kneeland and Howard Davies, team representative.

Studies on Waste Sulfite Liquor

I.—Fractionation of Lignin-Sulfonic Acids

by LEO FRIEDMAN and BERT S. RUSK*

IN the manufacture of sulfite pulp an essential feature of the process is the removal of lignin from the wood. This results in the formation of water soluble calcium salts of the lignin-sulfonic acids. For every ton of dry fiber produced by this process the waste liquor contains approximately one ton of soluble organic material. Of this amount about 1300 pounds are lignin and 700 pounds are carbohydrates, other materials occurring in only relatively small amounts.

The problem presented by the waste liquors from the sulfite process is of interest not only because of its bearing on stream pollution but because of the tremendous economic waste that is involved. Attempts to utilize the materials in sulfite waste liquor have been very numerous and many patents have been issued covering all kinds of industries. None of the suggested methods of utilizing waste sulfite liquor has, however, been an answer to the problem of the disposal of the tremendously large amount of material that is available. It appears that before successful solution of this problem can be attained a better knowledge of the chemical construction of lignin and its compounds must be reached.

Early studies on lignin led to the belief that it was a single substance. More recently this conception has been changed to one that lignin is probably a mixture of closely related compounds. There is considerable argument as to whether anyone has ever isolated pure lignin. Brauns, working at the Institute of Paper Chemistry, has recently isolated a material that is claimed to be native lignin. (1) Differences obtained in different laboratories have frequently been attributed to the method used in the isolation of the lignin. Many investigators have argued against the study of lignin recovered from the sulfite pulping of wood because the lignin may have suffered far-reaching decomposition during the cooking process. Since, however,

most of the interest in lignin chemistry exists because of the desire and necessity of utilizing waste sulphite liquor, studies on the nature of the lignin-sulphonic acids existing in the solution seem to be desirable.

Fractionation of Lignin-Sulfonic Acids

Klason (2) and Hagglund (3) have found that part of the lignin-sulfonates in sulfite waste liquor can be salted out by calcium or sodium chloride, and the remaining portion can be precipitated as the lead salt upon the addition of basic lead acetate. Tomlinson and Hibbert (4) have further separated the calcium chloride precipitate method into two fractions. Another and probably more satisfactory method of fractionating the lignin-sulfonic acids is by the addition of aromatic amines. The fraction precipitated is generally termed alpha-lignin-sulfonic acid. The remaining portion, beta-lignin-sulfonic acid, can be precipitated by the addition of basic lead acetate.

Klason has stated that the alpha fraction consists of 67 per cent of the lignin content of the wood and the beta about 30 per cent. He considered the former to be identical with the fractions salted out by sodium or calcium chloride. Hagglund has, however, presented experimental evidence to the contrary and has pointed out that the addition of an aromatic amine causes the precipitation of a considerably larger quantity of material than does calcium chloride. The yield was also shown to be dependent upon the nature of the amine used. The observations of Hagglund have been confirmed by Tomlinson and Hibbert who found that the degree of efficiency of the various reagents as precipitants increased in the following order: sodium chloride, calcium chloride, quinoline and isomylamine, beta-naphthylamine, and finally lead acetate.

As the result of studies by the above investigators, it is questionable that the alpha and beta fractions represent chemical individuals. The relative amounts of the fractions depend not only upon the pre-

cipitant used but upon the pulping conditions involved in the separation of the lignin from the wood. Much work has been done on the fractionation of lignin-sulfonic acids obtained from European and Eastern woods and the analyses of these fractions. In this investigation the same general procedure employed by Tomlinson and Hibbert (4) has been followed on sulfite waste liquor obtained in the commercial pulping of Western hemlock. Sulfite waste liquor obtained through the courtesy of Rayonier Inc., Shelton, Washington, was used in this study. The liquor had the density of 1.047 g. per ml. and contained 11.1 per cent solids and 1.03 per cent ash based on the weight of the waste liquor.

Experimental

Commercial sulfite liquor produced in regular cook of previously untreated Western hemlock in calcium bisulfite cooking liquor was treated in exactly the same manner as that described by Tomlinson and Hibbert (4) in order to prepare potassium salts of the lignin sulfonic acids present. In similar manner to that described by Tomlinson and Hibbert the lignin-sulfonic acids were separated into three fractions which have been called, following their example, K. L. S. A. I, II and III. The procedure followed is presented in Diagram I.

The fraction designated K L. S. A. I represents those potassium lignin-sulfonates that were precipitated with quinoline, fraction K L. S. A. II was precipitated with beta-naphthylamine, and fraction K L. S. A. III was precipitated from the remaining solution by lead acetate. The yields of the three fractions were 73.0, 15.4 and 11.6 per cent, respectively, as compared with 70, 16, and 14 per cent obtained by Tomlinson and Hibbert from spruce lignin-sulfonic acids. Only a little over 50 per cent of the lignin originally present in the waste liquor was recovered in the precipitated fractions.

In order to compare the nature of the products obtained in this study from Western hemlock cooked commercially with those obtained by Tomlinson and Hibbert from spruce

*Department of Chemistry, Oregon State College, Corvallis, Oregon. Published with the approval of the Monograph Publication Committee, Oregon State College, as Research Paper No. 17, School of Science, Department of Chemistry.



**DYE
PROBLEMS**

**FOAM
SPECKS**

PITCH

If at this season of the year the water you use in your mill adversely affects the quality of your paper or causes loss of production, we suggest that you confer with our Technical Department.

GENERAL DYESTUFF CORPORATION



435 HUDSON STREET, NEW YORK, N. Y.

Boston, Mass. Providence, R. I. Philadelphia, Pa. Charlotte, N. C. Chicago, Ill. San Francisco, Cal.

wood cooked on a laboratory scale, the results of methoxyl determination, carbon, hydrogen, sulfur and potassium content have been summarized in Table I which also gives the results obtained by Tomlinson and Hibbert in their work.

Summary

The lignin-sulfonic acids in a sulfite waste liquor obtained from a commercial cook of Western hemlock have been subjected to fractionation yielding products very similar to those reported by Tomlinson and Hibbert from a spruce waste liquor prepared in the laboratory.

The three fractions were obtained in yields of 73.0, 15.4 and 11.6 per cent, respectively.

Analyses of the fractions for OCH_3 , S, K, C, H, O have been carried out.

References

- (1) F. E. Brauns, Paper Trade Jo., Dec., 1938.
- (2) P. Klason, Ber. 53B, 1864 (1920); 61B, 614 (1928).
- (3) E. Hagglund; Wochbl. Papierfabr., 61, 73 (1930); Zellstoff u. Papier., 13, 261 (1933).
- (4) G. H. Tomlinson and H. Hibbert, J Am. Chem. Soc., 58, 340 (1936).

Institute Accepts Fifteen Students as 1939 Freshmen

● Dean Harry F. Lewis of The Institute of Paper Chemistry, Appleton, Wisconsin, recently announced that fifteen students had been selected as members of the first year class of the eleventh academic session which begins on September 11, 1939, with a field course in wood technology in Northern Michigan.

Of the fifteen students selected one is from the Pacific Coast, Paul Bernard Hansen of Yakima, Washington, a graduate of the State College of Washington at Pullman.

Benz Talks On Cellophane

● O. F. Benz, sales manager, Cellophane Division, E. I. DuPont de Nemours & Co., Inc., recently addressed a San Francisco meeting of Zellerbach Paper Co. salesmen.

Jerry Alcorn Takes Trip East

● For his vacation this year Gerald F. Alcorn, technical director, Everett mill, Pulp Division, Weyerhaeuser Timber Company, took the train for Michigan on June 30th and picked up a new car.

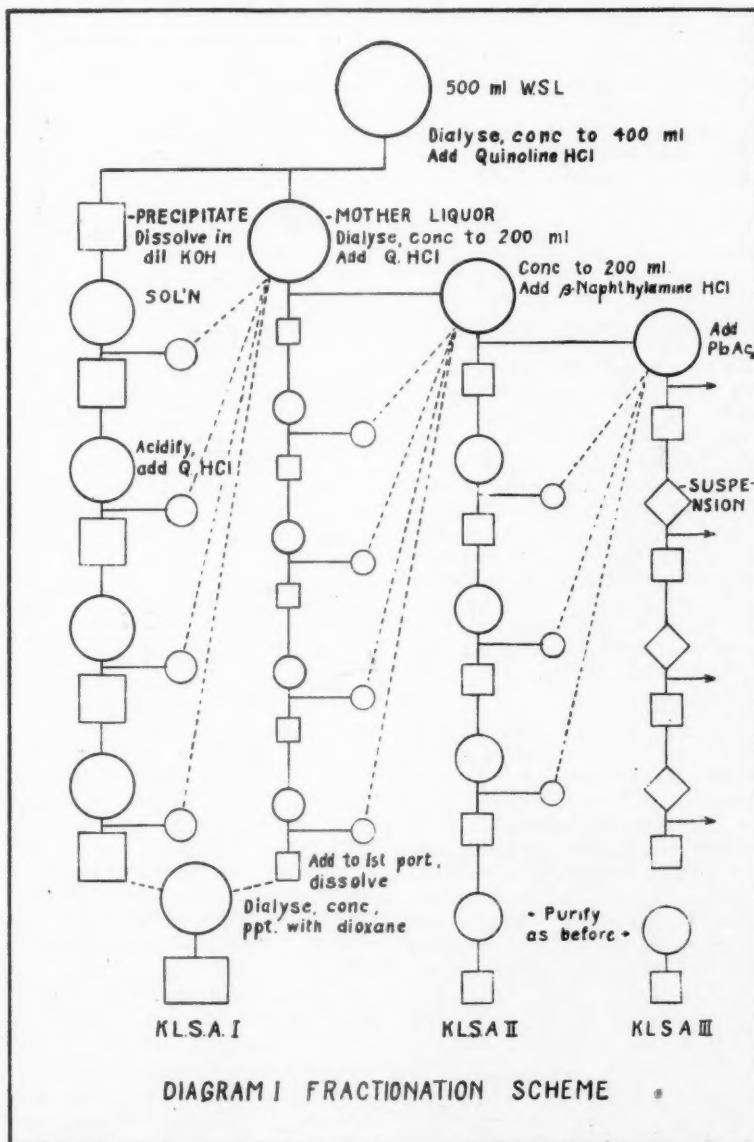
In Chicago he met Mrs. Alcorn, who with their two children, has been visiting in the Middle West for several weeks. From there the Alcorns drove in their new car to San Francisco for a look at the Golden Gate Exposition before returning to their home in Everett.

Table I
Summary of Analyses of the Potassium Lignin-Sulfonates
K. L. S. A. Fractions

Per cent	I		II		III	
	F & R	T & H	F & R	T & H	F & R	T & H
S	6.3	5.4	7.4	6.6		5.6
SO_3H	16.0	13.7	18.6	16.7		14.2
K	5.4	3.7	7.6	5.0		5.8
"Lignin" on K and SO_3H free basis	78.6	82.6	73.8	78.3		80.0
OCH_3	12.7	12.8	9.7	12.0	9.3	9.2
OCH_3 based on "Lignin"	16.1	15.5	13.1	15.3		11.5
C based on "Lignin"	67.12		65.22			
H_2 based on "Lignin"	6.04		6.14			
O_2 based on "Lignin"	28.84		28.64			

F & R—Results obtained in this investigation.

T & H—Comparable results obtained by Tomlinson and Hibbert (4).



Boost Wood Pulp— A Versatile Raw Material

by WILLIAM C. McINDOE*

ALAYMAN would think of paper as the only finished product derived from wood pulp; but those of us who have worked with it and studied it are fascinated and encouraged by a steadily lengthening list of products that can be made from it: cardboard cartons, wall boards, lumber substitutes, rayon, plastics, lacquers, explosives, etc. This is especially true of the highly purified dissolving grades.

We who have watched our normal wood pulp markets being wiped out or drastically curtailed by the abnormal economic conditions existing in the world today will welcome any encouragement of other outlets for our materials. We have seen war-pressed Japan curtail rayon production over 70 per cent with consequent vanishing of our oriental pulp market. We know, also, that, fearing naval blockades, she is seeking self-sufficiency by pulping native grasses and the woods from the areas of Outer Mongolia and the "Western Hills" of China. Therefore we are justified in believing that Japan will give us a rapidly diminishing market. Hence we must develop other and domestic markets.

As is true for the major portion of our wood pulp, these additional outlets are also still in the eastern part of the country. Eastern manufacturers and their financial backers do not realize how truly effective our Western advantages of very cheap power and fuels can be when combined with excellent plant sites on deep water.

● Let us examine four of these markets for wood pulp that should be encouraged to come to the Pacific Northwest. These four are: first, the cellulose xanthate or viscose process, with rayon and cellophane as products; second, the cellulose acetate process whose products are rayon, transparent sheeting, safety photographic film, the laminating layer for safety glass, plastics, and

lacquer ingredients; third, the cellulose nitrate process by which rayon (though no longer made in the United States), photographic and other films, plastics, lacquers and explosives can be made; and fourth, the ethyl cellulose process for making rayon, transparent sheeting, plastics, and a lacquer toughening ingredient.

For most of these final products we can offer local markets in addition to the customary national ones. For rayon we can offer the insistent demand of the automobile tire manufacturers for rayon tire cord in the Los Angeles rubber center—now the world's largest. For photographic films what larger market would you want than Hollywood's great movie industry? Why not make their films in the West? We even have the silver they need. At present all the automobile assembly plants on this Coast get their supplies of safety glass from eastern sources, there being no plate glass manufactured in the West as yet. Molding powders for injection-molded plastics and the sheets, rods and tubes for compression-type presses are all manufactured in the East; but here on the Pacific Coast we do have clever and thriving molders of plastic articles from kitchen drawer and radio knobs to radio cabinets and window frames, windshields and cockpit covers for airplanes. Their volume of business has increased more than three and a half times in the past year on the basis of the number of the ultra-modern injection-type presses installed and operating. We have a large paint and lacquer industry on this Coast and the packing of dried fruits and vegetables uses an estimated \$1,000,000 worth of cellophane each season for wrappings. I am presenting here some illustrations demonstrating the versatility of our wood pulp. (Mr. McIndoe exhibited a number of slides showing a variety of products made from wood pulp.)

For the four processes mentioned above we can offer abundant supplies of wood pulp and all of their chemicals from Pacific Coast manufacturers at prices at and often below New York levels, with no greater transportation costs. Indeed,

much lower by water wherever we can move our materials that way to any of our numerous plant sites on deep water. Plate 1 indicates in diagrammatic form the main chemicals required in each process.

Do you all know that the dissolving grades of wood pulp, made from the abundant Western hemlock in our own Pacific Northwest, have captured just about 65 per cent of the domestic rayon pulp market? Also, if the late Dr. Charles H. Herty could prove that satisfactory grades of rayon could be made from Southern pines, I am sure that Dr. Henry K. Benson at the University of Washington will be even more successful with pulps from Douglas fir.

● For the viscose process the carbon bisulphide, sulphuric acid, and zinc sulphate are manufactured in California; the caustic soda comes from both Washington and California; sodium sulphate from California and Utah; glucose (corn sugar) is stored in adequate quantities on the Pacific Coast for the confectioner's and bakery trades. A similar sugar is prepared by the inversion of the cane and beet sugars of Washington, California, and Utah. California, Arizona and New Mexico can supply cotton linters (2nd cut), to supplement your own dissolving pulps.

● For the acetate process the glacial acetic acid and acetic anhydride would come from Washington and California; acetone and sulphuric acid, from California. The sulphur chloride for the conversion of glacial acetic acid to acetic anhydride is manufactured in both Washington and California. Liquid sulphur dioxide and methylene chloride sometimes used as substitutes for glacial acetic acid as the solvent for the acetylation reaction, are both manufactured in California.

● The cellulose nitrate process requires only sulphuric and nitric acids in addition to wood pulp. Both of these acids are made in California and the latter also in the State of Washington.

● Ethyl cellulose, a relative newcomer in this field, is made by the

*Industrial Chemist, Coronado, California. Presented before the Joint Meeting of the Pacific Section of TAPPI and the Pacific Coast Division of the American Pulp and Paper Mill Superintendents Association at Tacoma, Washington, June 3, 1939. Mr. McIndoe recently made marketing studies for the power generated at Bonneville Dam as Industrial Chemist, Corps of Engineers, U. S. Army, and also industrial surveys for The Industrial West, Incorporated, of San Francisco, as their Senior Chemist.

TABLE I
Annual Chemical Requirements and Materials Costs for a
5,000 Ton per Year Rayon Plant

VISCOSE			ACETATE		
Chemicals	Tons	Cost	Chemicals	Tons	Cost
Dissolving pulp	6,250	\$532,000	Dissolving pulp	3,630	\$308,600
Caustic soda	3,430	148,000	Acetic acid, glac.	6,900	1,173,000
Carbon bisulphide	1,900	171,000	Sulphur chloride	13,250	583,000
Sulphuric acid	9,500	122,500	Sulphuric acid	500	6,500
Sodium sulphate	2,000	34,000	Acetone	3,000	285,000
Zinc sulphate	165	10,000	Methylene chloride	?	\$100/ton
Glucose	1,645	101,000	Sulphur dioxide (liq- uid)	?	\$60/ton
Sodium sulphide	?	\$60/ton			
Partial total		\$1,128,500	Partial total		\$2,356,100

action of ethyl chloride upon alkali-cellulose, which in turn results from the action of caustic soda on wood pulp. The caustic soda would come from both California and Washington and the ethyl chloride from California.

Should Seek Chemical Pulp Markets

For a better balanced industry we should strive to increase materially the amounts of our wood pulp going into products other than paper. Not only would we enjoy the benefits of such diversification and of not having all our eggs in one basket; but also, if we could induce the manufacturers taking our wood pulp to build factories out here among us, we would have the bene-

fits of their payrolls and the obvious savings in transportation costs. Also, we would drop into the laps of our friends, the Pacific Coast chemical manufacturers, a vastly increased volume of this business.

How great would this increase in business be? Let us cite as an example an average size rayon plant and tabulate its annual requirements of chemicals and calculate their cost, based on Pacific Coast market prices prevailing during the last quarter of 1938 and early 1939. An average rayon plant produces 10,000,000 pounds of rayon yarn annually. Table I gives the costs and requirements of such a plant for both the viscose and acetate processes.

It is realized that the market prices used undoubtedly are higher than contract prices would be. However, these estimated materials costs would represent valuable new business to the Pacific Coast chemical manufacturers, some of whom are already supplying the Pulp and Paper Industry with chemicals.

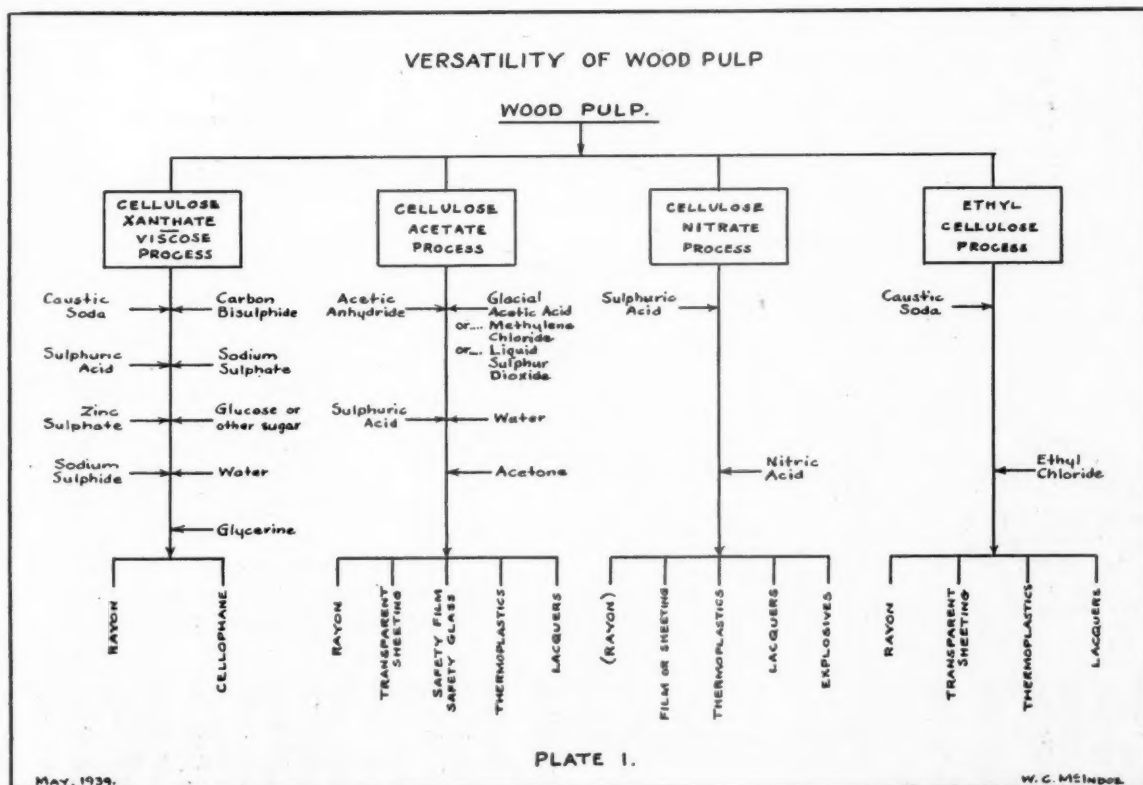
On the basis of the present tire production levels of the automobile tire manufacturers on this Coast plus the estimated per capita consumption of the population the eleven Western States could take the rayon production of six such plants.

Cellulose Plastics Growing

Beyond this rayon market is that swiftly increasing one for the cellulose-base plastics, which last November passed the 500,000 pounds per year mark, exclusive of the unknown amounts of cellophane and the equally unknown amounts going into lacquers.

I believe that it is evident that the Pulp and Paper Industry should organize a strong, unified team and launch a concentrated and sustained drive to boost the uses of wood pulp — other than paper — nationally; but above all in our own Pacific Northwest.

Now, let me speak directly to the chemical manufacturing people in





HOT MONEY

YESTERDAY *one thief* stole more dollars from American Industry than *all* the "stick-up" men took from the public.

This industrial thief is FRICTION. His "hot money" is *your* money—represented in wasted power, rapid wear, costly delays and repairs.

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And these "friction-catchers" are at

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Shell keeps a force of them always ready. They are armed with friction-killing lubricants of numerous types and grades. And these Shell specialists have an enviable record for their *arrests* of friction. Thousands of big and little cases on big and little machines crowd their case-history files.

Call in the Shell lubrication man today. There is no charge for his help and no obligation to you.



SHELL INDUSTRIAL LUBRICANTS

your midst. For your own selfish interests in strengthening and increasing your business by many thousands of tons, get behind this movement and boost wood pulp for all you are worth.

Granted any measure of success, the effects will be far reaching and will behave like the proverbial snowball started rolling down hill. Not only would we all have increased business; but more payrolls. For the most effective and economical handling of this business we would turn more to water-borne transportation and thus aid in reviving our merchant marine. Our railroads would get their share of this increased business. More factories mean more men at work, more money in circulation, more mouths to feed and more people to clothe—in other words, prosperity for all of us.

Fargo Elected President of Calco Chemical

● F. Miller Fargo, Jr., executive vice-president of the Calco Chemical Company, Inc., Bound Brook, N. J., has been elected president of the company, succeeding Robert C. Jeffcott, who retired April 30th.

Mr. Fargo has been connected with Calco since it was founded in 1915 by Mr. Jeffcott. The company was formed at the outbreak of the World War to supply certain dyes and dye intermediates which had previously been imported. Beginning with a plant covering 10 acres and consisting of three buildings, Calco has grown until it now covers over 110 acres with 100 buildings. The list of products it manufactures has passed the 700 mark.

In 1929 Calco became a subsidiary of the American Cyanamid Company. It is today one of the leading dye-stuff manufacturers in the United States.

Calco is represented on the Pacific Coast by the Pacific Coast Supply Company with offices in Portland, Seattle and San Francisco. William G. Marshall is in charge of dyestuff sales and service for the Pacific Coast Supply Company.

New Edition of Volume V Published for Paper Industry

The following review of the new edition of Volume V of the textbooks covering the manufacture of pulp and paper written by R. S. Kellogg, secretary of the Joint Textbook Committee of the Paper Industry.

● "The third edition of Volume V of the series of textbooks upon the manufacture of pulp and paper sponsored by the North American paper industry and published by the McGraw Hill Book Company, is now available to a large waiting list of readers and users throughout the world.

"The preparation and publication of this series of books during the past 20 years under the capable editorship of J. N. Stephenson has been a noteworthy cooperative undertaking. The original publication of the five volumes in the series, which constituted an undertaking

unique in the paper industry, and one which has been seldom equalled in other industries, took place during 1921, 1922, 1924 and 1925. Volumes I and II, intended for the preliminary training of students who had not had opportunity to attend school sufficiently to understand the technicalities of pulp and paper manufacture, dealt with questions in mathematics, physics, hydraulics, electricity and chemistry. These volumes have not needed revision and have been in steady use since publication.

"There has been a different story, however, with Volumes III, IV and V, which cover the manufacture of all kinds of pulp and paper. Here there has to be constant revision to keep step with the development of new processes and equipment in a world-wide industry using a great variety and wealth of raw materials. Therefore, it was necessary to bring out second and revised editions of Volumes III, IV and V during 1927, 1928 and 1929, to be followed by the present third editions of Volume III in 1937, Volume IV in 1938 and Volume V at this time. In the preface to the latest edition of Volume V the editor notes especially that the section on paper making machines embodies descriptions of new headbox designs, a new method of installing the wire, a new press part, a new electric drive, an additional chapter on insulating boards, and new designs of cylinder machines. Extensive changes have been made in the text on hand-made papers (now a section by itself) and in paper making details. The sections on coated papers and paper testing have been rewritten.

"The section on paper making machines, originally written by J. W. Brasington, is revised for fourdrinier machines by George D. Bearce, and for cylinder machines by Arno W. Nicker-

son. The some 400 pages in this section cover in simple technical detail, with numerous drawings and illustrations, every part of the paper machine from stock chest to calender, winder and slitter. There is also a full discussion of the many questions of operation having to do with water and steam supply, care of machine clothing, machine room ventilation, the basic principles of paper machine drives and paper production calculations.

"The section on hand-made papers is by the best known world writer on the subject, Dard Hunter; the section upon paper finishing, originally written by W. D. Sommerville, is revised by Vincent Waters; the section upon coated papers is written by Norman Clark and Edwin Sutermeister with valuable assistance from other practical operating men in the industry; the section upon gummed papers is by Gardner R. Alden and that upon paper testing by B. W. Scribner and F. T. Carson. The final section in the book under the title 'Papermaking Details' was prepared by the editor with the assistance of numerous associates in the industry and consists chiefly of definitions of the principal types of paper, including the materials used, their preparation and the uses of the product.

"There is also a detailed index of the volume covering some 17 pages, by means of which any important item can be quickly located.

"Volume V, upon the manufacture of pulp and paper, is uniform with its predecessors and carries the same high standards of readability and mechanical production. It contains approximately 775 pages and is delivered postpaid for \$6.50 per copy. Orders may be placed at this price through the PACIFIC PULP & PAPER INDUSTRY."

Salesmen Can Now Take Cars And Samples Into Canada

● American salesmen, long unable to drive into Canada on business and closely restricted on the use of samples, are highly pleased at the modification of the Canadian Customs regulations.

Following is the official announcement of the changes by the Bureau of Foreign & Domestic Commerce, U. S. Department of Commerce.

"A revision of the Canadian Customs regulations on June 1, 1939, broadens the scope of the regulations by permitting the unrestricted use in Canada of automobiles and other travelers' vehicles, whether for health, pleasure or business purposes, including automobiles used by commercial travelers and other business men, according to advice received from Ottawa by Philip M. Crawford, Acting District Manager, Seattle Office Bureau of Foreign and Domestic Commerce.

"The new regulations place tourist's automobiles and other travelers' vehicles in one category, and free entry of such vehicles will be granted without bond or deposit, regardless of whether they will be used by a tourist, or a traveler for business purposes, provided they are not used for the purpose of transporting goods or persons for hire while in Canada.

"Under the revised regulations, and the current regulations governing commercial travelers' samples, salesmen will now be able to carry their own samples and make their sales in their own automobiles, and will not be required to give a bond or make a deposit upon entry against the automobile."

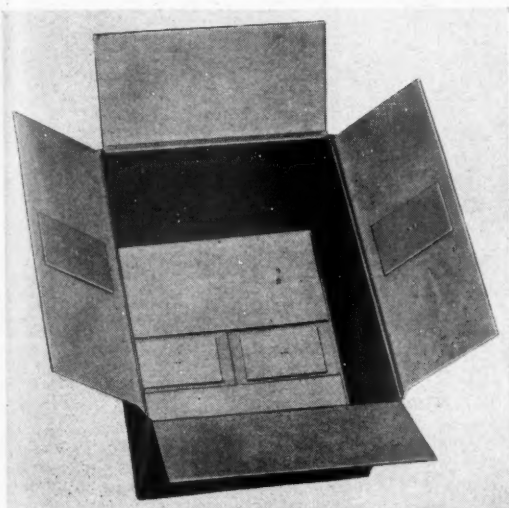
Copies of the new regulations may be obtained from the Seattle District Office, 809 Federal Office Building.

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Angle of Repose	35°
Atomic Weight	32.065
Atomic Number	16
Boiling Point	444.6°C. 832.28°F.
Compressibility	13.1 x 10 ⁻⁶ per atm. 20°C. (100-500 atm.)
Density	Rhombic 2.07 at 20°C. Monoclinic 1.96 at 20°C. Liquid 1.808 at 115°C.
Melting Point	Rhombic 112.8°C. Monoclinic 119.0°C.
Weight	Bulk: 84 to 90 lbs. per cubic foot Liquid: 113 lbs. per cubic foot

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FIBREBOARD'S NEW "LEVEL-BEST" CONTAINER with the "self-leveling" pieces affixed to the top and bottom flaps. These afford greatly increased protection to canned goods.

Fibreboard Introduces New Damage-Proof Shipping Container

"Level-Best" Shipping Case Said to Eliminate
Rim Dents and Damage to Can Labels

● When the only criticism of a new product is that it wasn't invented sooner, it must be good. And that, it seems, is the one fault that has been found with the new self-leveling shipping case recently introduced by Fibreboard Products Incorporated, under the registered name of "Level-best." Here's how it happened, as told by a member of the Fibreboard staff:

A Fibreboard executive was showing off the company's newest baby to an important shipper. He explained how pieces of the same material as the case were stitched and glued to both top and bottom flaps to make an even, level floor; contrasted this with a similar case which did not have this feature, pointed out how this self-leveling would reduce rim dents and damaged labels on cans, turned to his guest and asked, with a note of triumph in his voice, "Well, what do you think of it?"

"The only thing wrong with that box," was the reply, "is that somebody didn't think of it a long time ago. It sure would have saved my company a lot of grief."

"Yes," was the comeback, "and the grief that you heard about was probably only a small per cent of the complaints that didn't come back to your office."

"How do you figure that?" queried the shipper.

"Because most of the crabbing gets lost in transit. You sell to a broker. He doesn't unpack your cases. Instead, he sells an order of full cases of your stuff out of his warehouse. It goes to a jobber, but he doesn't unpack your cases, either. The jobber's salesman sells to dealers throughout his territory; one case here and several cases there. The dealers get their orders and they are the ones who unpack your goods and find the chipped labels and rim-dented cans. Then it's too late."

"Too late? Why? A claim can always be filed against the railroad or truck company, can't it?"

"By whom?" flashed back the box manufacturer, "Your broker accepted his shipment 'in good condition.' The jobbers, next in line, accepted their shipments 'in good condition.' It isn't until a dealer opens the cases in his store that the hidden damage is discovered. With only one or a half-dozen cases on hand, a dealer usually won't make a formal complaint and demand redress in dollars and cents. But, boy, oh boy! what he says to your jobber's salesman is plenty!"

"But couldn't the jobber make the claim for all these dealers of his?"

"It would be an impossible job," was the reply, "Your goods are scattered, in small lots, over the entire area in which the jobber operates. It would be like hunting needles in a thousand haystacks to locate all those different shipments and find out which ones were damaged enough to justify a claim."

"I begin to see a great light," said the shipper thoughtfully, "I felt you had a vastly improved shipping case when you first showed it to me, but now I really appreciate it. And I appreciate that it isn't the small number of complaints that I do get that counts, but the large number of those I don't get that are most important."

In this actual conversation is pointed out one of the gravest problems confronting every shipper, the hidden damage to his goods that is not detected until shipments finally reach the dealer. And it was this dealer resentment which aroused Fibreboard designers to create the "Level-best" shipping case, which gives a perfect "floor" for packages or cans, allows tighter packing, reduces rim cuts, label scratches, and can dents

caused by the tilting of cans and the resulting load shifting of old-style cases.

Not only does the new case allow cans to rest level inside, but also the cases remain smooth and rest level outside. When stacked, the load is evenly distributed throughout the case, and cases can be stacked higher without danger of concealed damage.

Prevents Shifting

Because the new "self-leveling" device is a feature of both top and bottom flaps, there is no possible shifting of the load even when cases are turned upside down. This flat "floor" is obtained by using pieces of the same material as the case; these pieces being wire-stitched and glued to the flaps. In all other respects, however, the case is the same as heretofore, is made in one piece, folds and ships flat just like ordinary old style cases.

Before offering "Level-best" shipping cases to shippers, exhaustive tests were made by rail, truck and water shipments out of Pacific Coast ports, and results, according to Fibreboard officials, show this new case to be far superior under all these different shipping conditions. The new Fibreboard case makes unnecessary the full-length end flaps, which were never practical, because of excess material used and resulting high cost.

● The "Level-best" is patented, both as to structure and machines for making, but Fibreboard Products Inc. is licensing its manufacture. So rapid has been the adoption of "Level-best" that Fibreboard officials believe any shipping case without self-leveling features will soon be obsolete, as this type of case remedies a condition which railways and shipping companies have long stressed as a major cause of concealed damage to goods in transit.

Trade Talk

of Those Who Sell Paper in the Western States

Gus Johnson Rejoins Everett Pulp & Paper

● Late in June, William J. Pilz, vice-president and general manager of the Everett Pulp & Paper Company of Everett, Washington, announced that Augustus Johnson had resumed his connection with the company.

Well known in the paper trade, Mr. Johnson has many friends who will be pleased to learn that he is back again with the company with which he was associated for so many years, one of the oldest mills on the Pacific Coast. Everett manufactures a complete line of book, label, and writing papers and stationery.

Mr. Johnson will be located in the company's San Francisco sales department, and will assist in the promotion, sale and development of Everett papers.

Gates and Horton Handle SF Sales for Everett

● Following the resignation of J. L. Murray as sales manager of the Everett Pulp and Paper Company, William J. Pilz, general manager, announced that for the present and until otherwise advised, R. A. Gates will have charge of main mill sales in the San Francisco territory, and J. E. Horton will look after the sales for the company's stationery department in the same area.

Mr. Murray's headquarters were in San Francisco.



R. A. GATES, Everett Pulp & Paper Company, San Francisco

Zellerbach Opens Branch at Riverside

● The Zellerbach Paper Co. has opened a branch office at 2759 Main street, Riverside, California, according to a recent announcement.

Wrapping paper supplies only will be stocked at the branch, which will be in charge of A. G. Hutchins, salesman for the company in that district. He will be assisted by James Gardner and Stanley Wilson.

Brown Moves Los Angeles Plant

● The Brown Paper Goods Company of California has moved its Los Angeles plant from 2900 East Eleventh Street to 4949 Everett Avenue in the Central Manufacturing District. The new location provides more than 10,000 square feet of floor space for offices and converting plant all on one floor. The building is of modern factory type of construction, well lighted and ideally suited to the company's needs.

The firm is manufacturing its regular line of cocktail napkins, according to Charles E. Digby, and also is making a line of glassine and sulphite bread bags. An additional bag making machine is being added to the present number the latter part of this month. The company sold its series of regular napkin making machines to the Crown Willamette Paper Co.

The sales territory of the Brown company has been extended into the Northwest and an office will be established in Seattle shortly.

Mormon Killed By Automobile

● John Mormon, assistant manager of the wrapping paper department of Blake, Moffitt & Towne, Los Angeles, was suddenly killed by an automobile the latter part of June. Mr. Mormon was crossing Wilshire Boulevard with his wife when both were struck by a passing car. Mrs. Mormon was seriously injured. He had been associated with Blake, Moffitt & Towne for twelve years.

Treasure Island Exhibit

● An interesting item in the exhibit of California printing at the California building, Treasure Island, is a little tome entitled: "The Captivity of the Oatman Girls" by Stratton.

It was printed in 1857 by Whitton, Towne & Company, in San Francisco, from the press of which the present day wholesale paper house of Blake, Moffitt & Towne is a successor.

William Law Joins General Paper

● William Law, the original Chinese paper salesman, is now affiliated with the General Paper Company, San Francisco. Law is not only a bang-up paper salesman, with more than 20 years experience in back of him, but he is also a movie actor. He appeared in "The Good Earth," and "The Thin Man." He also possesses a fine baritone voice.

R. L. Molloy, a veteran of the San Francisco paper game, who has been at it more than a quarter of a century, is also now connected with General.

Other newcomers to General's sales staff are: Jack Bordin, William Merrill, and Charles Nelson.

McHaffie Changes His Boats

● As well as being a paper man of considerable accomplishments, W. R. McHaffie of the Crown Willamette Paper Company, Los Angeles, is a salty sailor. Recently he sold his 42-foot auxiliary ketch, the "Rambler," the latter part of June, but before the boat hardly got across the horizon he had a new one, a 35-foot motor sailer, originally named the "Stormy," and built by N. J. Blanchard Co. of Seattle. "Capt." McHaffie will re-christen the new boat shortly, the new name is as yet unselected. Newport Harbor is the skipper's home port when leading the sailor's life.

Enquist Recovering From Illness

● Al Enquist, grand old man of the San Francisco Division, Zellerbach Paper Co., suffered a severe attack of illness at the office June 7. He is now recuperating at home.

Norton Unhorsed—Recovering

● Clark Norton, salesman, San Francisco Division, Zellerbach Paper Co., was thrown from his horse June 17, and suffered a serious head injury. His many friends join in wishing him a speedy recovery.

Attend Convention

● Attending the recent convention of the Pacific Society of Printing House Craftsmen in Los Angeles were the following San Francisco paper men: J. A. Gruner, Blake, Moffitt & Towne; T. C. Macormack, Strathmore Paper Company; Milton Colton, Zellerbach Paper Company, and Victor Hecht, Zellerbach Paper Company, who addressed a session of the convention.

Crown Revises Booklet

● The Crown Zellerbach Corporation has revised and modernized its popular booklet, "History and Description of Paper Making."

All visitors to the corporation's mills, and students interested in paper making will be presented with the booklets, which are exceptionally well done.

Briscoe Marries Miss Mohn

● Robert H. Briscoe, credit manager, Spokane Division, Zellerbach Paper Co., and his bride, daughter of Al Mohn, manager of the division, were honeymooning in California last month.

Pacific Coast Visitors

● James F. Ryland, vice-president and general manager, Standard Paper Manufacturing Company, Richmond, Virginia, was a recent Pacific Coast visitor.

● W. B. Sheehan, secretary-treasurer, Mississquoi Corp., Sheldon Springs, Vermont, paid the Coast a visit not long ago.

Goldman Handles Consolidated Sales Manager

● Samuel F. Goldman, who for many years was sales manager of the United States Paper Co. of Los Angeles, has relinquished that post to become sales manager of the Consolidated Paper Mfg. Co. also of Los Angeles.

Brooks Visiting In South America

● S. D. Brooks, president of Powell River Company, is touring South America and plans to spend most of his time in Buenos Aires and Rio de Janeiro. It is a pleasure trip solely, as Powell River Company does not consider South American attractive sales territory just now.

Bishop Getting Better

● R. C. Bishop, San Francisco representative of Eastern paper mills, is recovering in a Los Angeles hospital from a severe illness.

Squirrel Snitches Genuit's Golf Ball

● Great was the amazement of a paper men's foursome on the Del Monte links during the Paper Conference in May, when one of the group following up his drive saw a large gray squirrel seize the new ball and scamper away with it. Stones only drove the animal higher into the trees.

After considerable debate no stroke was charged against the ball loser, J. W. Genuit, sales manager of the California Fruit Wrapping Mills of Pomona, and he continued the game with a new ball. The other three of the foursome, Ansel A. Ernst of the Everett Pulp & Paper Company, F. C. Van Amberg of the Angeles Paper & Box Company, and J. P. Nelson of the Los Angeles Paper Box Company, all corroborate the squirrel stealing the ball episode.

Royal Paper Co. Liquidates Stocks

● The Royal Paper Company, started in Los Angeles a year ago by W. Benoit, has liquidated its stocks through sale to J. J. Sugarman Co., auctioneers.

Watson Enjoying Camping Trip

● R. T. Watson, advertising manager, Blake, Moffitt & Towne, San Francisco, and Mrs. Watson are enjoying a camping trip near Battle Mountain, Nevada.

Jaggard Vacationing In Alaska

● B. P. Jaggard, Hammermill Paper Co., San Francisco, accompanied by Mrs. Jaggard, is enjoying a vacation trip to Alaska. He will visit the mill at Grays Harbor on his return trip.

Visitors From Atlanta

● Sidney L. Wellhouse, National Paper Co., Atlanta, Ga., and Mrs. Wellhouse, were San Francisco visitors last month.

Sutherland Representative Visits Coast

● Ed Phillips of the Sutherland Paper Company of Kalamazoo, Mich., spent a week in Los Angeles the latter part of June and continued his western trip north to San Francisco and Seattle. He is in charge of the sales of decorated plates, cups and napkins.

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PURIFICATION
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German Paper and Paperboard Production Declined in 1938

● Production of paper and paperboard in Germany during 1938 was slightly less than in 1937 when a record output was reached, the Forest Products Division, Department of Commerce, recently reported.

The production decline, about one percent, was attributed chiefly to a slackening in domestic demand. Considerable stocks from excessive purchases in 1937 were carried over in 1938.

Total production of paper and paperboard decreased from the 1937 high of 3,943,000 tons to 3,898,600 tons in 1938. Printing and writing paper production decreased 53,079 tons from the 1937 peak of 1,470,000 tons.

Production of wrapping paper and paper and paperboard, however, increased in 1938 over 1937. Wrapping paper output advanced 23,494 tons to a total of 1,081,167 tons in 1938, and paperboard production which totaled 943,305 tons in 1937 was recorded at 1,002,557 tons in 1938.



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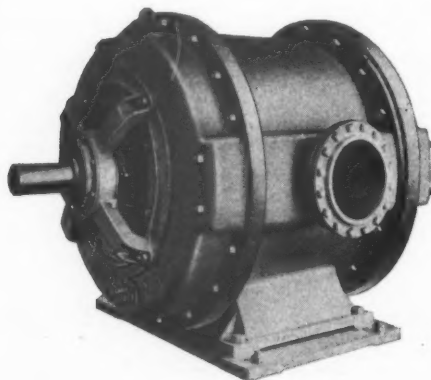
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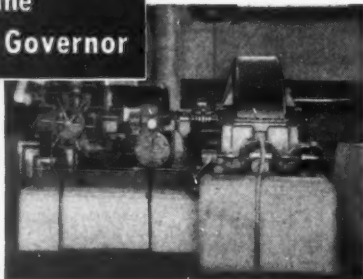
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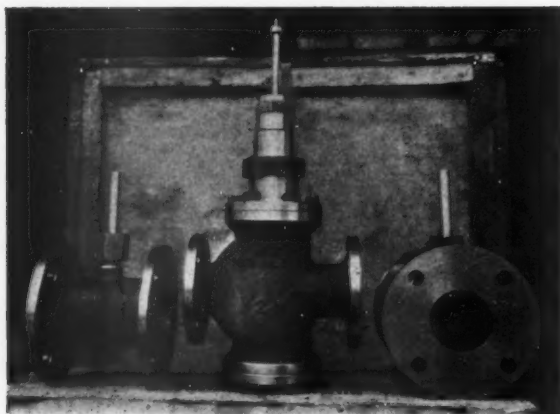
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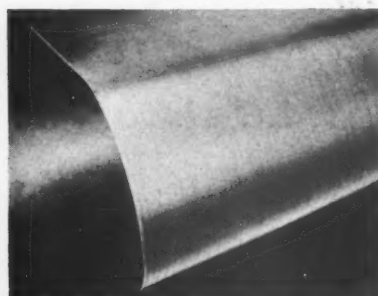
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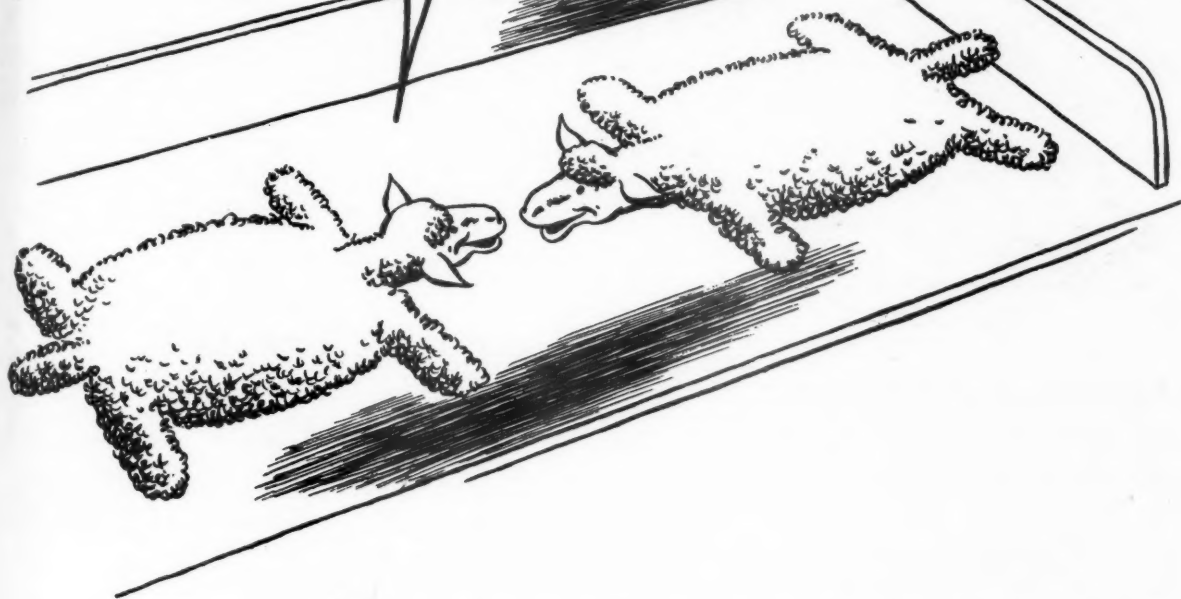
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